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UNDERGRADUATE TRAINING AND REQUIREMENTS FOR LICENSE TO PRACTISE

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THIS is an enormous country, and when we add to its vastness the realization of its rapidly increasing population, embracing, as it does, people of the most diverse nationalities, we find ourselves face to face with problems which will tax all the wisdom that the country can summon to its aid. It is a problem not for the partizan, but for the patriot; and we therefore as patriots have our part to play in the great drama. No people have ever been endowed with a vaster heritage. By natural law it follows that our responsibilities are correspondingly great, because "to whom much is given of him also shall much be required" has its application to the nation as well as to the individual. Are we as Canadians going to be equal to these responsibilities? Although the task before us will tax our resources, moral as well as material, we look forward with confidence to the result. In the national development of the country each has his place and his part to play. As a guild we have our share in these large responsibilities. We are charged with the duty, on the one hand, of promoting the physical well-being of the nation, and, on the other, of seeing that the ill shall be well treated in order to restore them to health, and, when that is not possible, to improve their condition and ameliorate their suffering. If we, as a profession, are to bear our share in the development of this vast country, with such a rapidly growing population, our energies must be united. To that end there must be a unifi-

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cation of the profession from the Atlantic to the Pacific. We must be one in effort as well as one in aim. If we are to attain the ideals which we should and no doubt will set before us, there must be complete understanding and fullest confidence between the profession in the West and that in the East. We will have to be animated by the same aspirations and guided by the same methods.

The first step to that end is the adoption of a common standard of qualification for admission to our ranks, as we have now a common standard of ethics for all after admission. Recent Dominion legislation is a step in the direction of attaining that end, but it is an examination standard, and I hope we may ere long go further than a common examination standard, as it is not reliable. Examinations, as ordinarily conducted, are quite inadequate as tests of knowledge and fitness for any position to which applicants may aspire. It is of frequent occurrence in examination everywhere that good men have failed and poor ones have passed with good standing. Various causes contribute to such results, the physical state of the applicant as well as of the examiner; the injudicious character of many examinations; lapse of memory and appreciation, which often occur to even the best man; the chance that brings to the weak man some of the few things he happens to know. There are few things more difficult than to find out exactly what any one knows. In consideration of these facts it is necessary to adopt some other than the examination standard.

The only efficient plan, as least so far as medicine is concerned, is to go behind the examinations and see that the education and practical training of the student are of such a character as to insure thorough preparation in each and every year of the undergraduate course. To do this should not be difficult in this young country, as we have only seven or eight institutions giving medical education, and these are all universities, or closely affiliated with them. If a province, better a group of provinces, or, best of all, Canada as a whole, drafted a schedule of requirements necessary for the education of applicants for license, the universities would, in their own interests as well as in those of higher education, make the necessary provision to meet them. Such a schedule should specify the length of each academic year of work apart from vacation, examinations, etc.; the necessary laboratory equipment; the amount of laboratory training; the minimum of hospital facilities, and the time necessary to be devoted to work in hospitals; the character of the training to be given therein; that a critical record of the student's work during the session be made day by day; that the instructors shall be capable, and, if deemed wise, that at least a certain proportion of them shall devote their whole time to hospital and research work. If, under such conditions, the student's work and his knowledge of the subjects are certified to by each department as fulfilling all the requirements, your board should be able to accept them with confidence.

Hitherto a certificate of attendance is all that has been required. The attendance need not be more than fairly regular and may be quite perfunctory; in fact, such a requirement, by emphasizing the attendance and ignoring the work, is rather a premium on idleness, as the idler is equally entitled with the worker to be certified as having fulfilled the requirements. It would be quite a different matter if the applicant were required to present evidence that his knowledge and work were up to the required standard, as no self-respecting representative of a department would put his name to such a certificate unless the requirements were fully satisfied. Even his own good name and personal interests should prevent his doing so. To insure that the conditions are being carried out satisfactorily, an expert commission, knowing the needs of students and how best to meet them, should be appointed which should from time to time visit the various institutions at which students are being prepared for your license to be satisfied that the requirements are being fulfilled.

"Walking the hospital" has long ceased to be efficient as a means of becoming proficient in medicine. It is not sufficient to listen to even the most instructive clinics. The student must himself *do the work* in the wards and laboratories and learn the meaning of all the facts that he finds and their bearing on each other as well as on the patient under his observation, and how best he may meet the various indications. He has not only to find out all the facts before him, but to learn how to search them out. Few of us, in the plenitude of our wisdom, realize the enormous difficulties with which the student is brought face to face. To cope with these problems he should have the most painstaking guidance and the wisest counsel. In earlier times the student acquired his practical training during his apprenticeship to a physician or surgeon, an apprenticeship that all were required to serve, and an excellent training it was if he had the good fortune to fall under the guidance of a capable man. Unfortunately the system, which had much that was excellent and that cannot be replaced by any other, has become inadequate for the requirements of modern medicine, owing to the great increase of laboratory training which is required.

With the changing conditions, while we have made great advances in scientific knowledge, we have at the same time lost much of the personal side of our professional training.

There is a growing feeling that those who are engaged in active practice are not in a position to give the best instruction in medicine. This is not the place or occasion to discuss this important matter, but it may be said in passing, that there can be no room for doubt that the teaching of the student in the basic principles of medicine and his guidance in working out these principles in relation to patients in the hospital wards, should be done by well-trained men, who are capable instructors. I say *capable instructors*, because too little importance has been attached to the capacity to instruct on the part of those teaching clinical medicine and surgery. The teaching of clinical and laboratory methods should be done by capable instructors who are devoting their whole time to this and research work. This would ensure the work being carried on in proper sequence and with regularity, and with the certainty that the student does all the work, both of the laboratory and the ward, properly and with understanding. The present method of giving students their training wholly by practitioners must necessarily be more or less irregular and haphazard, and therefore inadequate to the attainment of the best results. So far at least as the training in clinical and laboratory methods and practice are concerned, the same principles should be applied to the teaching of medicine as obtains in the other departments of university work.

That the profession through their national authorities have a right to consider the efficiency of the instructors in the institutions sending graduates up for license to practise, cannot be gainsaid. They certainly have the right to demand that the facilities for instruction, both hospital and laboratory, shall be adequate to the needs for preparing undergraduates for their licenses, if so, why should they not also be permitted to draw attention to lack of efficiency, if such exist, in the staff who are to use these facilities?

To carry out such a scheme as is here outlined should not be a difficult matter in Canada with its small number of educational institutions. Why should not Alberta lead the way? Your neighbours, British Columbia and Saskatchewan, should be ready to join you. Alone you can inaugurate a reform in medical education in Canada and establish a standard of qualification such as will place the practitioners of this province on a higher plane than that to be found elsewhere. You would set an example which all the other provinces must follow. National registration would then result as a natural consequence, and that, too, on the basis of the highest qualification. A commission might be appointed to study the whole question and, after consultation with the universities, draft the schedule of requirements to be complied with by applicants for license. The universities would no doubt readily comply with the requirements, making such changes in the curriculum as might be needed. The universities are sometimes charged with maintaining too low a standard of requirement for graduation. While there is some truth in these charges, yet it should not be forgotten that every improvement in the methods of medical education and advance in the requirements for education, at least in Ontario, have originated with the universities. No fear need, therefore, be entertained that obstacles will be placed in the way of proper advance by any properly equipped institution. Such a course as I have outlined would be less expensive in time and money than the present obsolete and ineffective one, and at the same time assure that none but the fully qualified would be registered.

It would also not only render it necessary for existing institutions to raise their standard of training to the plane which you adopted, but it would prevent any new ones being established with a lower standard. If a duly high standard of preparation be exacted, the number entering the ranks of the profession would not exceed the needs of our rapidly growing population. To convince any one that prompt action in this matter is necessary, we have only to study the problem it has become in the United States. In that country very creditable improvement has been made during the last few years, but the obstacles in the way of progress are so great that it will require many years of unremitting effort to raise medical education to a satisfactory standard. However, I see no reason why they, too, should not adopt some such plan as is here suggested of requiring all candidates to submit satisfactory evidence of a certain definite course of training before presenting themselves for license. Such a course of action is probably within the rights of each state, as it is here within those of each province. It is much easier to prevent evils than to cure them.

This matter is eminently suitable to be undertaken by the national association, which is to meet here next year; the occasion would seem opportune for it to take up this work. Let it bring its influence to bear on the Dominion Registration Board to require of all teaching institutions that ample facilities be provided in the way of hospitals and laboratories, that the staff be duly qualified, that the time devoted to the work by staff and students shall be ample, and that no student be permitted to present himself for examination unless his record of work shows, not only that he has attended during his full course, but that he has done all his undergraduate work satisfactorily. If the work during the whole course has been properly done, and the record, certified by each department, shows that the applicant is qualified to present himself for examination, the result will seldom be doubtful. The good name of the university should be a sufficient guarantee that the work of the student is well done, and no head of a department would jeopardize his good name by certifying to a man's work unless it is satisfactory. The examination, if necessary at all, might well then be confined to matters having to do with the application of his knowledge to the practical work of his profession. In time, it is possible that after graduation a year's training as an interne in an approved hospital should be required before a license is granted. In that case the student's course would extend to six years, or, if he took a combined science and medical course, to eight years, a sufficient time to enable him to qualify as a safe, capable physician. Such a plan should also be the best means of developing his character as a man of honour as well as of high attainment in professional knowledge.

That the undergraduate should have due attention paid to the ethical side of his character needs no argument. Under existing conditions of defective preliminary education, and an overcrowded curriculum for the time allotted to it, it is well-nigh impossible to do anything in the way of ethical instruction and character building. Unfortunately the conditions incident to a young country are not conducive to the ethical and cultural side of education. Canada stands high in the estimation of the world for both the training of her undergraduates and the high ethical character of her physicians, but her development has reached such a degree that there should be much improvement in the training and culture of the profession. This can be done without inflicting hardship on any applicant for license. Such an advance on our part should give a stimulus to education in general and to university undergraduate work in particular.

These remarks have regard to the Canadian trained graduate only; what of those coming from Britain and foreign parts? If we are to raise our standard of qualification and culture, we must admit the highly qualified from all parts. If admission by examination is a failure as regards the Canadian graduate, it must be equally so with those from other countries. May we not apply to them the same principle of requiring evidence of proper undergraduate training? The graduates of such universities as Oxford, Cambridge, and London, might well be accepted without any hesitancy. There will be no danger from an influx of such men, as few of them would wish to come. As to the graduates of other British institutions there might be some difficulty, as at some of them there are many students who spend years of idleness about their university, hoping in time to pass the ordeal and graduate by some means; but the difficulty would right itself in time, as it would soon become widely known that in this country no one would be received without satisfactory evidence of thorough training in each and every year of the undergraduate course. As in all young countries we stand in great need of more men of marked attainments and high culture. We are often, and with justice, charged with inbreeding, and therefore with narrowness. If we would attain the highest available status, our portals must be open to the well-trained and cultured from every country. In no way can we more effectively raise our standard of knowledge or add to our culture. There is no danger of overcrowding from such a class. In a short time the graduates of some of the universities of the United States and other countries should be admitted freely, as they will prove to be of distinct value in aiding us in raising our standard of qualification and in adding to our reputation as a profession. Canada has not as yet added much to the world's stock of scientific knowledge, and therefore needs all the men of high scientific training who may wish to come to her.

Through your Licensing Board you have in your own hands the power to place this province in an ideal condition in the interests of the public as well as of your own. At the same time, you would be acting for "the good of Canada" in a far higher sense than are the majority of interests for which that talisman is invoked. Your influence as a large and growing community would, if your demands were just and reasonable, be so felt by all the universities in this country that they would readily comply with the requirements. The other provinces, especially your neighbour on either side, would doubtless join with you or soon follow your example, and Dominion registration, on the basis of the highest standing, would become in a short time an accomplished fact.

NOTE: Since this address was given the Ontario Medical Council has decided to accept the University results in all subjects except Medicine, Surgery and Obstetrics; in these examinations are required. It has apparently done this without exacting any further conditions as to a student's work, length of course, or equipment and facilities provided by the University: it almost appears that they had decided to forego all responsibility.

BACILLUS LEPRÆ IN THE NASAL MUCOUS MEMBRANE

By F. A. de Verteuil, M.R.C.S. (Eng.)

Medical Superintendent Cocorite Leper Asylum, Trinidad

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IT was in 1871, forty years ago, that Hanson first demonstrated the bacillus which is now universally accepted to be the cause of leprosy. His observations were published in 1874. The exact manner, however, by which the germ gains access to the human body, is still a matter of considerable doubt. Many and various are the factors and agencies which have been incriminated as the materia peccans during these last forty years. Heredity no longer occupies a prominent place as the chief means of its spread and continuance, the most that can be claimed for it is that the child born of leprous parents may inherit a constitution more susceptible to the attacks of the leprosy bacillus than that of a normal individual. The theory of contagion has gradually forced its way to the front, though the struggle has been a long and arduous one between the contagionists and non-contagionists. One of the leading and most prominent supporters of the latter school was the late Dr. Bevan Rake, medical superintendent of the Cocorite Leper Asylum. It is now generally accepted that the disease is propagated by contagion only, direct or indirect. This contagion, however, is evidently of a very low power, certain unknown conditions being required before the disease can pass from one individual to another. This probably explains why it has taken so long to establish definitely its contagious nature. As an example of its small contagious power, may be cited the fact that a husband or wife may suffer from the disease without communicating it to the other. We have had such a case under our care, the family living in good hygienic surroundings.

Insect Theory of Infection: The most recent theory as to the ætiology of this disease is that it is propagated by means of insect-bites. Since it has been definitely ascertained that insects play an important part in the transmission of various diseases, many have naturally turned towards this source in the hope that it might throw some light on infective diseases, where the mode of origin was obscure. Leprosy is the latest to be brought under this new search-light. Various observers[1, 2, 3] have at different times drawn attention to the possibility of the disease being spread by insects such as flies, mosquitoes, fleas, lice, the bed-bug, itch, and even the demodex folliculerum. Goodhue,[4] in 1906, at the Molokai leper settlement, found an acid-fast bacillus in the mosquito (culex pannens) and the bed-bug (cimex lectuarius); this acid-fast bacillus he considered to be the bacillus lepræ. At the last International Congress on Leprosy, Professor Ehlers,[5] who had himself conducted some experiments on the subject at the Danish island of St. Thomas, with negative results,[6] while admitting the possibility of this method of infection, considered it to be very rare. A resolution was, however, passed to the effect that it was desirable that the question of its transmissibility by insects, as well as the presence of leproid disease among animals (rats), should be studied.

Castellani, discussing the subject says, "Everything in the history of the disease appears to favour its spread by animal agency." Goodhue's discovery of the germ in insects has recently been simultaneously confirmed by two observers in South Africa. Drs. Sandes[7] and Long,[8] working quite independently, have succeeded in demonstrating an acid-fast bacillus similar to the bacillus lepræ in bed-bugs fed on the blood of leper patients. There is no doubt that the hypothesis that the disease is transmitted by blood-sucking insects fits in admirably with many facts known about the disease, and helps to explain many hitherto obscure points.

At the Trinidad asylum, since its establishment over forty years ago, there has not been a single case of the disease recorded among the nursing Dominican sisters of the attendant staff or among the washerwomen. The wards of the asylum are always kept scrupulously clean, a special prize being offered monthly to the inmates whose wards are the cleanest. Two of the attendant chaplains have, however, contracted the disease. The first case was recorded in Dom Sauten's book, "La Léprose"; the other has been under our personal observation. The chaplain's house is in the asylum grounds, though far way from the patients' wards.

Nasal Theory of Infection: The fact that the disease is probably propagated by a blood-sucking insect, should not make us close our eyes to other possible, and perhaps not uncommon, methods of infection. The chief channels hitherto considered have been the alimentary canal through commensal feeding, the skin by inoculation through abrasions or sores, and the respiratory passage by inhalation. It was generally thought that the nasal passage and upper respiratory tract was the most common path of infection. In 1897 Sticker[9] propounded the theory that the nasal mucous membrane was the primary seat of the disease. He found the bacillus lepræ there in one hundred and twenty-eight out of one hundred and fifty-three cases he examined. He considers that the initial lesion of the disease is a specific ulceration, or more rarely a tubercle, of the cartilaginous septum of the nose, and that this lesion persists and is an active source for the diffusion of infection. Epistaxis, or a nasal discharge, often early symptoms, are, he says, a clear indication of the existence of such a specific lesion.

Jeanselme and others had already drawn attention to the large number of bacilli present in the nasal secretion of leper patients. A subsequent observer, Lié,[10] of Bergen, found the bacilli in only 35 per cent. of the cases he examined. Kobbe,[11] quoted by McLeod, examined the nasal mucous of one hundred and thirty-five lepers for the bacilli at Rolben island. He found the bacillus in all of the forty-five nodular cases examined, in thirty-two out of thirty mixed cases, and in twenty-one out of sixty anæsthetic cases. Speaking at the recent congress at Bergen, McLeod[12] stated that "probably the most common route of invasion is via the nasal mucosa and upper respiratory tract. This view is corroborated by the frequency with which the nasal symptoms form one of the earliest manifestations of the disease, such as rhinitis, coryza, ozæna, epistaxis, lepromata in the nasal mucosa, and the presence of lepræ bacilli in the nasal discharge." Dr. Victor Heiseer,[13] Director of Health for the Philippine islands, states that the earliest and most constant symptom observed in the Philippine cases was an ulcer situated on the nasal septum. He found this sign present long before there were any other objective or conscious subjective symptoms of the disease.

From October, 1910, to April, 1911, we carried out a systematic bacteriological examination of the nasal secretion of about one hundred and eighty-five lepers at the Trinidad asylum. We found the bacilli in all of the one hundred and five tubercular cases we examined, but only in nine out of the eighty anæsthetic cases. These results compare fairly closely with those obtained by Professor Deycke[14] at the Mahaica asylum, British Columbia. He found the specific bacillus in all of the eighty-one tubercular cases he examined, but only in six out of the thirty anæsthetic cases. We should state that in our anæsthetic cases are included a large number of patients in whom the disease had long been arrested, all active signs having completely ceased. Some of these patients had the disease for periods of fifteen, twenty, and twenty-five years, and in one case for over forty years. A much larger percentage would probably have been obtained if only anæsthetic cases showing active signs of the disease had been chosen.

The following table represents in tabular form the results obtained by different observers.

Observer	No. of Cases	T	+	A	+	A	+	No. of Cases	Per Cent. of Cases
Sticker	153	...	...	...	...	...	...	128	84
Lié	...	...	...	...	...	...	...	...	35
Kobbe	135	45	all	60	21	30	22	98	72
Deycke	111	81	all	30	6	...	...	87	78
De Verteuil*	185	105	all	80	9	...	...	114	62

T stands for Tubercular cases; A, for Anæsthetic; M, for Mixed; +, for Positive cases.

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*In our series mixed cases are included under the heading, "Tubercular."

We have not been able to obtain the figures as regards division into tubercular and anæsthetic types in Sticker's and Lié's cases. It is, however, probable that the greater percentage of Sticker's patients were suffering from the tubercular type, while Lié's were of the anæsthetic type. As a result of these observations it may be stated that the bacillus lepræ is to be found in the nasal secretion in every case of tubercular leprosy; in anæsthetic leprosy it is to be found in only 10 to 30 per cent. of the cases. The following figures are given by Wise in "A Report on the Nastin Treatment of Leprosy at the Mahaica Asylum, British Guiana, 1908-10." Nodular cases, 87·7 per cent.; anæsthetic cases, 20·3 per cent.; mixed cases, 43·3 per cent. There can be no doubt as to the frequent and often early presence of nasal lesion in leprosy even in anæsthetic cases. In a case under our care of anæsthetic leprosy in a young girl aged twelve, epistaxis was the first symptom of the disease noticed by the child and her mother. At the time we saw the case, a nasal discharge and hæmorrhage were still the most prominent symptoms. In this discharge were myriads of bacilli. This patient was placed under Nastin treatment and has done remarkably well.

It does not follow that the early nasal lesion is necessarily the primary lesion of the disease. It may merely be that the nasal mucous membrane is particularly susceptible to the attacks of the bacillus when once it has gained access to the human system. This is the view apparently held by Brinckerhoff,[15] director of the

Leprosy Investigation Station at Hawai, and Moore, of Honolulu. They carried out a systematic examination of the nasal septum, as well as a bacteriological examination of the nasal secretion, of over seven hundred individuals belonging to a race known to be susceptible to leprosy, in the hope that it might reveal early cases of the disease. They concluded that no inconsiderable number of inmates in Hawaian institutions have, as the sole evidence of leprosy, lesions in the nose which are discharging the bacillus lepræ. They doubt the specific nature of the ulcer and its significance in determining the site of the primary lesion. At the same time they admit that the specific microbe is frequently found in nasal discharge of lepers, and insist on the importance of this from a prophylactic point of view and its value as a diagnostic test in doubtful cases. This lesion would, therefore, seem to be more in the nature of a channel of exit than a path of entry to the specific bacillus.

An important point against the nasal theory of infection is the fact that the bacillus is frequently absent from the nasal secretion in cases of anæsthetic leprosy. The supporters of the nasal theory state that the primary lesion or ulcer in these cases has healed and can no longer be detected.[16] The two chief varieties of leprosy, the tubercular and anæsthetic, are so essentially different in their course and clinical manifestations as well as in their geographical distributions (the tubercular type is more common in temperate climates, while the anæsthetic variety is more prevalent in tropical countries), that various theories have been brought forward to explain this difference. It may be that it is due to a different method of infection. In the one case, from the primary inoculation in the nose the bacilli make their way by means of the lymphatic vessels into various parts of the body, while in the other, they are injected directly into the blood stream by the bites of blood-sucking insects. This is merely in the nature of a suggestion on our part, the reasons for this view being given in a letter to the *British Medical Journal*, October, 1911.

There are certain minor anatomical and pathological considerations which an exacting critic might place against the nasal theory of origin. The bacillus lepræ bears some striking analogies to the tubercle bacillus, not only in its staining and morphological characteristics, but also in its pathological manifestations. Now, primary tubercular disease of the nose is a rare condition. The nose is particularly well guarded against invasion. The vestibule is lined with thick skin as far back as the limen nasi, and, moreover, is armed with thick recurved vibrissæ. The Schnederian membrane is thick, erectile, endowed with very high reflex excitability inimical to bacterial growth.[17] On the other hand, in spite of this protection the nasal mucous membrane is specially liable to infection and inflammation from air-borne particles or bacteria. The offending bacteria are caught in the sticky, nasal secretion, and should the resistance be low, have a good chance to invade the body. The power of the nasal mucous membrane to catch undesirable material is very well illustrated in towns during a fog.

CONCLUSIONS

1. Leprosy is probably propagated in many, if not most, cases by means of blood-sucking insects. Everything in the history of the disease appears to favour such a mode of transmission.
2. There are, however, other possible paths of infection, the most common being the nasal mucous membrane. The early implication of this organ and the constant presence of the specific bacillus in the nasal secretions are the chief points in support of such a contention.
3. The early and frequent presence of the specific bacillus in the nasal secretion affords a ready, easy, and valuable method of diagnosis in doubtful cases. A nasal examination should always be made in all obscure skin and nervous conditions in patients coming from a country where leprosy is prevalent.
4. The bacilli which leave the system even in the slightest nasal discharge, may be an element of serious danger to those in constant contact with leper patients. Nasal hygiene, not only from the point of view of prophylaxis to others, but also from the patient's own benefit, should form an essential part in the treatment of lepers. In the Trinidad asylum an antiseptic nasal douche is in daily use among the patients.
5. In view of the strong possibility of infection through the nasal passages, it would be wise for those who come in close and constant contact with lepers to practise nasal douching with some mild antiseptic lotion. The inhalation of a volatile oil, such as eucalyptus oil, or plugging the nostrils with cotton wool dipped in some antiseptic, as suggested by an American authority, might serve equally well.

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5. In view of the strong possibility of infection through the nasal passages, it would be wise for those who come in close and constant contact with lepers to practise nasal douching with some mild antiseptic lotion. The inhalation of a volatile oil, such as eucalyptus oil, or plugging the nostrils with cotton wool dipped in some antiseptic, as suggested by an American authority, might serve equally well.

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It can truly be said of these devoted ladies that "theirs is the noblest work on earth."

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PSEUDO-MUSCULAR HYPERTROPHY

By M. G. Burris, B.A., M.D.

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MY part in to-day's programme is to present to you the story of one form of hereditary disease which has attacked certain families in the eastern parts of Colchester and Halifax counties. Pseudo-muscular hypertrophy, to which I refer, is a rather rare and interesting disease, presenting a definite clinical picture and a doubtful pathology; for while some claim to have discovered degenerative changes in the cord, and hence consider it of myelopathic origin, others assert as confidently that no changes of any kind can be demonstrated in the central nervous system, and so place it, as an independent affection, among the muscular dystrophies or myopathies.

Without venturing an opinion on this matter, I wish to give a few notes upon the disease as it has appeared in this series, and to show by means of chart and otherwise that it has displayed marked hereditary tendency, and has adhered most faithfully to the original type through three generations. The history of the disease is, perhaps, more than usually pathetic in that it selects the growing child as its victim, very slowly renders it weak and helpless, and finally, at what should be the beginning of manhood or womanhood, results inevitably in death.

The people among whom these cases appeared were of Scotch and Irish stock. They came to Nova Scotia from their native lands about the year 1760, and settled in eastern Colchester. I have a fairly complete history of the generations of children born since that time and those of the first generation seem to have escaped the disease altogether, for between the years 1760 and 1820 no cases appeared.

My chart starts from the year 1815, when John D., of Musquodoboit, married Mary C., of Stewiacke. Of this marriage six sons and six daughters were born. Of the sons, three were affected by the disease, while all of the daughters remained normal. The remaining sons married and two of them reared families, but none of their children were affected, and, so far, none of their grand-

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Read before the Maritime Medical Association, July 5th, 1911.

children have suffered. Each of the six daughters married and of their children a total of seven sons fell victims. All of the daughters escaped, but the disease has reappeared and is fast nearing its close in a son of one of these daughters. This case I have personally examined.

The first three cases which appeared sufficed to impress the parents and relatives that some hereditary evil had fallen upon them, but they were totally unable to trace its origin, and it is reasonable to conclude that for two generations, at least, preceding this, no cases had occurred.

The afflicted ones of the family were known as "the crippled boys," but scientific knowledge of them was not lacking, and the condition was apparently recognized by Dr. Harrison, who practised in the Musquodoboit Valley some fifty or sixty years ago. His dictum that "none of them will see twenty" proved only too true, and is the more interesting from the fact that the first contribution to the literature upon this condition appeared in 1830 from the pen of Sir Charles Bell, so that in this, as in many other things, Dr. Harrison showed that he was not behind in his knowledge of things medical, and earned for himself such respect that his name is still mentioned among the old people of that section with much more than the ordinary esteem.

In this family the story of "the crippled boys" is almost a household one, and the mothers recognized, in many cases before the attending physician, that another son had been added to the list. Here I cannot forbear mentioning that at least some of the mothers claimed to know before confinement that a male child would be born and that he would be a "cripple." They based this belief on the observation that they did not experience the usual amount of quickening, and that the child felt heavy and lifeless in the womb. Whether this was fancied or real, I cannot say, but it is certain that these children were always slower and more lethargic in their movements than normal children. At any rate the point is of interest since I have not seen any mention of it in the literature.

I have obtained accounts from the sisters and mothers, who nursed and cared for the children long since dead, and have had the privilege of examining the case still living and of obtaining from his mother a detailed account of the onset and progress of the disease. This mother cared for her younger brother, who was a "cripple," and the following verbatim account is for that reason, I think, of more than the usual importance. The following are the chief facts: As a baby he was slow and lazy in his movements. He did not learn to walk as soon as other children and could never run about and indulge in active games. About the age of three years she first noticed a peculiar hardness and increase in the size of the calf muscles, but the child continued to grow and to gain slowly in strength until about the age of five or six years. At that time he could walk and run fairly well, but displayed a tendency to fall readily, and was more or less clumsy in movements generally. From that time on he gradually became weaker and more helpless, although he still continued to increase in stature. Other muscles became affected—those of the hips and shoulders especially, which at first became larger and firmer and later much wasted. He then walked in a peculiar way, waddling along with shoulders thrown well back and feet spread wide apart to keep from falling. When he sat down the shoulders were very much stooped. He tripped and fell easily, and had great difficulty in getting up. In doing so, he had first to get upon his hands and knees, and, holding his head low, he finally straightened up by placing his hands upon his knees. His feet became deformed so that for some time he walked "almost on his toes, and always wore the toes of his boots out first."

Later he became unable to straighten the legs and had to give up walking altogether, but crept about for a few years. This too was abandoned, and for two or three years now he has used a wheel-chair. He has never been a robust child, and only a few months ago suffered from a severe attack of lobar pneumonia, which has left him very much weakened. Careful questioning failed to obtain a history of any twitching of the muscles or unsteadiness in their movements, excepting such as in late years would result from weakness. He has never complained of pain or peculiar sensations. Indeed, so far as sensation to painful stimuli or to those of heat and cold go, the child has always been normal.

At the time of examination I found the child in an advanced stage of the disease. The calf muscles were very firm and fibrous and falsely hypertrophied. The thigh and gluteal muscles were atrophied, as were also those of the back, chest, shoulders, arms, and hands. The muscles about the mouth were hypertrophied, and there it was evident that the disease was making what will prove to be its last attack, for the cheeks felt firm and hard to the touch, and the finer movements of expression were diminished or impossible. Words were slowly spoken and not distinctly pronounced. Contractures of the flexor type had taken place at the ankle, knee, hip, and elbow, producing marked deformity. Kyphosis was quite marked and "winging of the scapulæ" apparent.

This, in short, has been the history of each of these cases. The disease has pursued a very definite and constant course in all. It began, in every case, before the age of six years, and "none of them have seen twenty." Appearing in three successive generations it has attacked only the sons of the daughters, and has so far left the families of the sons and their descendants untouched.

Having before me the above facts, I think that the diagnosis of pseudo-muscular hypertrophy is reasonably certain. I feel, however, that there is yet a great deal of information to be had in obtaining a more complete history of the family than has been possible in the short time at my disposal.

In conclusion I must thank those members of the profession who have aided me in securing data. They are Dr. D. A. Campbell, who loaned me literature upon the subject, Dr. Dickson, of Londonderry, for assisting me in the family history, Dr. Cox, of Stewiacke, who gave me a description of the cases he attended, and Dr. Whitman, of Musquodoboit, who assisted me in the examination of the case described.

CHARTS SHOWING INCIDENCE OF PSEUDO-MUSCULAR HYPERTROPHY THROUGH THREE SUCCESSIVE GENERATIONS

- John D. m. Mary C, 1815.....
  - *SAMUEL
  - *WILLIAM
  - *JAMES
  - John m............Children normal .G. children normal
  - Adam m. Janet A...Children normal..G. children normal
  - Andrew m. Marion B........No children.
  - Grizell m. Adam D.......
    - *FRANK
    - *SAMUEL
    - *ANDREW
    - Timothy m. Annie S........Children normal..G.children normal
    - Jane m. Geo. B....Children normal.G.children normal
    - Mary m. Peter A..Children normal
    - Bella m. Thos. S...Children normal
    - Annie m. Willard E......Children normal
    - Marion m. Edson C.......Children normal
  - Elizabeth m. George F.......
    - *EBEN
    - Howard m. Annie J........Children normal
    - Owen
    - John
    - Mary m. Colin H..Children normal
    - Susan m. Ira D....Children normal
    - Jane
  - Bella m. James R...Children normal. .G.children normal
  - Jane m. William J..Children normal..G. children normal
  - Mary m. Joseph M......
    - *JOHN
    - *JOSEPH
    - Adam m. Eliza M..Children normal
  - Emma m. John G........
    - *ADAM
    - Byard m. —......Children normal
    - Colin m. —.......Children normal
    - Minnie m. —.....Child normal
    - Alice m. Ernest C.......HAROLD
Other children (daughters) normal

Names of those affected in capitals.

* Deceased.

OBSERVATIONS FROM BOER-LAND

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PRIMITIVE methods of treating human ills are found to exist in Southern Africa as in all other countries. The impressions gained from a residence of some eighteen months among the Transvaal Boers in the Concentration Camps would lead one to place their attitude of mind regarding these methods on a plane between that of Europe's lower orders and of the savage races, though sometimes the ideas of this Dutch race vie in crudeness with those of the most primitive savages.

The early Dutch settlers in South Africa were isolated from the Old World. As their communities penetrated inland this isolation became more real, and even the modest commodities obtainable near the coast became luxuries. In the case of disease the pioneers, when the necessity arose, were forced to rely on their own curative ingenuity as applied to materials at hand. This developed along the lines of (1) making use of such available materials as would best emulate in their effects known but unavailable substances; (2) adopting the expedients of the natives with whom they were in contact; or (3) pure experiment. If the patient under any such treatment benefitted, this happy result was attributed to the remedy, and the knowledge was stored up for future use. I would relate a few of these crude endeavours.

Cattle dung, while still warm, came to be used as a substitute for bread- or meal-poultices, when these were not available, and eventually supplanted them. In time some of the efficacy of this application was attributed to inherent qualities in the substance itself, and its employment was further extended to watery solutions. A negro patient once presented himself whose knees were completely flexed from a parasitic muscular disease. The Boer caretaker of the hospital declared that he could cure him in a very short time. In response to an inquiry as to his mode of procedure, he explained that he would stir up water and manure in a tub and bathe the affected members in the solution.

Headache has called forth many remedies. One of the most popular is to fashion with a knife from a potato, a turnip, or other solid vegetable substance, two conical portions of such size as to admit of the smaller end being inserted into the external auditory meatus, the larger end protruding like some savage ornament. These are supposed to draw the headache out. This method may be combined with, or supplanted by, pressing thin slices of the vegetable selected to the forehead until they adhere. These are placed completely across the forehead. The use of a necklace formed of portions of the fresh potato is also common.

Eucalyptus, either in the form of the leaf or the oil, is probably more universally employed by these people than any other medicinal substance. As a rule it is easily obtained, for these trees, like stately sentinels, surround most of the farmhouses. The drug may be administered internally or applied locally. When used to combat headache, the leaves of the blue gum, as it is commonly called, are bound to the forehead with a white handkerchief, or, by those of dainty tastes, strung together and tied in the form of a wreath. If the oil be used it is simply smeared on the forehead.

It is said that if a doctor wishes to be popular with the Boers he must on every possible occasion prescribe a liniment, or "smear god," as the Taal has it. It matters little to them what it contains as long as it smears on well. Besides the oil of eucalyptus, sweet oil, castor oil, and animal fat are freely applied. A very common practice in local inflammation and swelling is to smear a mixture of red lead and castor oil over the diseased area, the whole trunk being sometimes covered with it.

In such diseases as pneumonia and pleurisy it is usual to paint the affected side of the chest with varnish or some substance that will afford an impermeable covering. Many, in addition, apply outside this a sheet of oilcloth or thick paper and make it adhere to the body. The object of this practice obviously is to imprison the heat in the affected part. The custom of completely covering the body with green paint was commented upon in England at one time, but I have never seen it here, and have heard of its occurrence in one camp only, where three children were the innocent objects. Needless to say all died.

Early in my connexion with the department, one of the best educated men in the camp at Balmoral in consulting me about his child, who was dying of dysentery, asked my opinion of an odd custom. This was to kill a goat, immediately to slit up the abdomen, and remove the entrails. The child was then to be wrapped in the still warm body-cavity until the skin cooled. This, as I afterwards found out, is a common custom in any case of severe illness. Some, in desperate cases, resort to the opening of a large vessel in the neck of a dog. Collecting the blood in a suitable receptacle, they immediately serve it up to the patient, who is forced to take as much as he can swallow. The idea is that the nourishing and vitalizing powers of the fresh blood will carry a doubtful case through a crisis.

Every household endeavours to have its supply of sulphur. Diluted freely with powdered sugar it is a favourite remedy for the common cold. It is used, too, in any chronic cough or throat trouble, and besides its immediate curative effect it is supposed to grant a more or less lasting immunity from such diseases.

In almost every Dutch homestead may be found a small box containing an assortment of medicines in condensed solutions —a development of the pre-tabloid days. This is called the "huis apotheck" or house apothecary. In it there is some remedy that is supposed to antagonize almost every disease, and the confidence placed in them is absolute. They are in reality cheap and unstable compounds on which the manufacturers make enormous profits. In several there is opium, and it is not unknown for a child to be given so much of this that death results. Many of the people brought these medicine boxes with them to the camps, and a special order had to be issued confiscating them in order the better to ensure all cases of illness being brought to the notice of those in authority.

Cold water is always used more or less sparingly by the ignorant classes, and in some of the camps force has to be resorted to in the prosecution of cleanliness. Many, indeed, seem to think that a cold bath in the winter season means certain death. But when it comes to ordering a fevered patient to be bathed or sponged, the practice is looked upon with horror. Should a person die after such treatment it is invariably looked upon as the direct cause of death. Relatives will plead with the medical attendant to forego any such measures, and even attended with the best results the method is looked upon with suspicion.

In treating infectious diseases the greatest difficulty is experienced in making understood the necessity of any precautionary measure, and the enforcement of these is followed by continuous complaints. Take, for instance, a case of scarlet fever occurring in a family of six children living in one tent. The sick member is in due course taken to the infectious ward of the hospital and given special nursing. The family is then removed to another tent in an isolated area, their goods throughly disinfected, and food, fuel, etc., brought to them. Yet, on most occasions, all this is bitterly resented, the mothers being more content to remain as they had been in the old surroundings.

The rule among the people with regard to the giving of food to the sick is to give them what they ask for. This is a favourite cause of disobedience to medical orders on the part of the mothers. A child seen to-day, prostrated with fever, may to-morrow, in the face of the strictest orders to the contrary, be found devouring a piece of bultong (sun-dried meat) because "he felt so much better." If, in a disease like enteric fever, the patient be kept strictly on a milk diet, the friends will frequently accuse the attendants of starving him. Smuggling various foodstuffs into the hospitals became so common that special burgher police have had to be kept on duty day and night, and barbed wire fencing placed around the hospital. Even these measures do not prevent visitors from frequently bringing in forbidden articles concealed beneath their clothing, and disposing of them when the nurse's back is turned.

SEMMELWEISS AND HOLMES

By H. E. MacDermot

McGill, '13.

TWO names are indissolubly linked with any reference to the history of puerperal fever, those, namely, of the Hungarian, Ignaz Philipp Semmelweiss, and of the New Englander, Oliver Wendell Holmes; but while in past years there has been some difference of opinion as to the respective merits of each in the matter, there can be no doubt now that it is Semmelweiss to whom the honour is due. Dr. Holmes at first attracted popular attention most, but with the work of Semmelweiss before us, the main points of which I hope to make clear, it is obvious that his were the exhaustive and original labours, and that it is to him we owe the first clear conception of the nature of that terrible scourge, childbed fever.

Ignaz Semmelweiss was born in the year 1818. In 1846, that is, at the comparatively early age of twenty-eight, he obtained the post of assistant in the great Lying-in Hospital of Vienna, and is described as being of jovial, easy-going appearance, stout, bald and florid, and with a marked Hungarian brogue. Above all, however, he had an immense capacity for work, and, with no particular bent of mind at first, was soon absorbed in the problem presented in the fearful ravages of puerperal fever in his wards.

The conditions in the hospital, however, were so closely related to his final solution of the problem as to deserve a somewhat detailed mention. Six years before his appointment the hospital had been enlarged and divided into two clinics, named the First and Second Clinics, respectively. In the First Clinic the medical students received their training, whilst the Second was devoted to the teaching of midwives alone. The training in each case differed in little except the *post mortem* work which was done by the students alone, and was carried on to an extent characteristic of the teaching of the day.

From statistics which had been kept since the division of the hospital, Semmelweiss found a peculiarly persistent difference in the extent of the mortality which existed in the two Clinics. In 1842, for example, there were 518 deaths in the students' division and

202 in the other; and again, in 1846, there were 459 deaths in the First Clinic and 105 in the Second, whilst in other years the proportion was almost unvaryingly twice as great in the First as in the Second Clinic.

Thus Semmelweiss was presented with a double problem, and, as will be seen, it was the mystery of his hospital variations in mortality that gave him the clue to the main issue. The knowledge of his day regarding the fever was, as far as he could gain access to it, in a state of great confusion, so much so as to be practically valueless to him; it would not be easy even to give a list of the different theories on the subject, nor would it be particularly attractive, except for their variety, perhaps, but an idea of what they were like may be gained from a somewhat humorous report of a discussion on the subject which took place at the Academy of Medicine in Paris about this time: "Among the thirteen Academicians, whom we have heard," as the summary runs, "we can count, essentialists, demi-essentialists, essentialists against their will, essentialists without their knowledge, absolute localizers, half and a quarter localizers, localizers with a leaning towards essentialism, and essentialists with a love of localization, specificists, typhists, traumatists and neo-traumatists."

But divided as medical opinion on the subject was, there was one doctrine which was quite generally accepted. According to this, there was in the ætiology of puerperal fever two main classes of factors, those acting from without and those acting from within the organism, these latter being supposed to depend on the condition of the organism during pregnancy and parturition. In detail, these factors were described in great variety, the internal especially; it was said that the fever was a milk fever, one French observer claiming to have found milk in the peritoneal cavity; that it was due to abnormal lochia; that it was erysipelas (a view which prevailed especially in England and America), and, somewhat more vaguely, that it was due to a specific something which spread by contagion.

The external factors were far more vague and unsatisfactory. There were, it was supposed, influences of a cosmic, telluric, and atmospheric nature at work, which gathered themselves together as a *genius epidemicus*, and after these had been at work for some length of time in a given place there was developed a miasma or special deadly entity which might remain indefinitely, witness the Lying-in Hospital. And besides these, some held to a belief in a definite contagium, assigning it the shape of a halo or areola clinging round the doctor or patient.

Of all the theories, that was the most valuable which considered that in some way or other the fever could pass from one patient to another. It had the effect of inducing very careful prophylaxis, and consequently the fever was far less prevalent in the countries where the theory was held, as in Great Britain, and to a certain extent in the United States. On the continent, on the other hand, there was sometimes a despairing tendency to allow the terrible and indefinable *genius epidemicus* to have its way.

Semmelweiss, however, was satisfied with nothing that could not explain his carefully observed facts, for he was of that independent cast of mind which is essentially scientific. He had, of course, to apply the current explanations to his facts, and the manner in which he did so raised him at once above the level of his *confreres*. He had first to account for the mysterious difference in mortality in the two clinics of his hospital, and here his methodical, orderly reasoning proved that the mystery was only increased by the attempted explanations.

It was cheerfully and confidently assumed, for example, that the epidemic influences caused the greater comparative mortality. Why, then, asked Semmelweiss, should these vague influences not affect all parts of the hospital building alike, for the two clinics were under the same roof; unless the absurd conclusion should be reached, that the influences preferred one part of the building to another, or, if, as was also supposed to be the case, they acted on the women before their admission to the hospital, then there was the further unlikely deduction that apparently the *genius* had a foreknowledge as to the destination of its victim. He showed, too, that lying-in women of the city outside of the hospital were, in the vast majority of cases, quite free from the fever.

Again, he compared this so-called epidemic with that of cholera, in which any and all parts of the city were liable to be attacked. In the case of puerperal fever, some actually proposed to check its ravages by closing the Lying-in Hospital for a time, but who, asked Semmelweiss, would think of closing the cholera hospital in the middle of a cholera epidemic. Besides, epidemics like those of cholera were only experienced occasionally, whilst puerperal fever was ever with them.

He then examined the charges against the atmosphere; it would seem, he said, that with varying conditions of temperature it would be most likely that there should be varying results in the amount of fever, and yet the mortality amongst his patients was, on the contrary, the same in winter as in summer, in spring as in autumn. Moreover, the Second Clinic should be affected by the weather as much as the other.

This was his reasoning, and it led him to the conclusion that the fever was due to causes acting within the walls of the hospital itself. Others held the same view, though with less conclusive reasons for doing so, and attributed the fever to various circumstances. There was some plausibility, for example, in the view that it was due to overcrowding in the wards, but on examining into this Semmelweiss found a condition of things which should on this assumption have produced an exactly opposite state of affairs; for it had come to pass that the Students' Clinic had established so evil a reputation for itself that women coming to the hospital made every effort to get admission to the Second Clinic and avoid the First, with the result that the Second was always full and had at times to transfer its overflow to the other ward. Semmelweiss gives in his "Etiologie" long tables of statistics in illustration of the overcrowding of the midwives' clinic, sparing no effort to make his proofs irrefutable. He went further, and showed by his tables that even when the overcrowding diminished in extent, the mortality showed no proportional decrease.

It was thought by some, again, that certain religious practices were responsible for the greater number of deaths in the First Clinic. The arrangement of the hospital was such that when the priests were summoned to give the last rites to dying patients they were able, in the case of the Second Clinic, to reach the sick room without passing through the rest of the ward, whereas, in the First Clinic, the whole ward had to be traversed to reach the room where the dying patients were put, and as on each visit the priests formed a procession with an attendant ringing a bell in front, the attention of the patients was inevitably drawn to the dismal sight. Semmelweiss could well believe that the result would be depressing to the patients; but that it was not fatally so he proved by doing away with the bell-ringing and arranging so that the priests should take a more circuitous route in order that the ward should not be disturbed. The mortality, however, suffered no decrease.

It was supposed that the fact that the women were of the lower, less well-cared-for classes, produced a greater tendency to their being attacked by the fever, but Semmelweiss pointed out that both wards were supplied with patients from the same source; it was supposed that the women suffered so much from wounded feelings of modesty in the bearing of their children in the presence of the men of the Clinic, that they fell a prey to the fever, but

Semmelweiss reminded the supporters of this theory that if modesty were responsible, it was hardly to be expected that an excess of it would be found amongst those who were admittedly, as a rule, the poorest and most degraded of the patients. Furthermore, in the private practices of the physicians of the city amongst the best classes of women, scarcely any cases of fever were met with.

Some urged that the patients were made to get up too early after parturition, but there was no difference between the two divisions in this respect; the ventilation was blamed, but both divisions had the same ventilation; the laundry from the lying-in women was said to get mixed with that of the General Hospital, but it was the same with the laundry of each division; these explanations and more did Semmelweiss examine and refute, sometimes with an earnest laboriousness that they did not deserve.

He then fell back on his own investigations, and greatly favoured was he in having before him such a valuable guide as was provided in the arrangement of the hospital into its two Clinics. It was, indeed, as has been observed, equal to research by experiment.

He noticed before long that whenever in the First Clinic patients underwent long drawn out labour, they were almost certain to be smitten with fever, whilst in the Second Clinic such a termination to a similarly prolonged parturition might, or might not, occur. He was puzzled, too, by the following circumstances: owing to the size of the city of Vienna, it often happened that would-be patients would be overtaken by labour on their way to the hospital from the more distant parts; they would have their child under some archway or on the glacis, and then go on to the hospital. Such cases, Semmelweiss found, showed an extraordinary freedom from attacks of the fever, all the more extraordinary when one considered the hardships the women had gone through. The number of such cases was by no means small, for since they were admitted to the hospital free of charge, for the sake of charity, it was not unusual for women of the lower classes to undergo confinement at some midwife's house, and then come and claim free treatment at the hospital, a very excusable deception when one remembers the terrible risks attending the birth of a child in the hospital itself.

Various commissions were appointed to report on the peculiar conditions of the death rate in the hospital, and one of these decided in 1846 that the fever arose from injury to the genitals of the patients in the examination made for the sake of instruction. It is true that the midwives of the Second Clinic made similar examinations, but, it was declared, the students were more rough, and especially the foreigners amongst them, and there were a good many foreign students. So the number of students was cut down and foreigners almost entirely excluded, with the unusually successful result that the mortality fell to a rather lower figure. In a few months, however, it rose to even greater heights. The commissioners had nothing more to propose except "epidemic causes with unusual characters" and could offer no remedy.

Semmelweiss was now almost in despair; he had examined and rejected every explanation which had the remotest degree of plausibility, and he had nothing to propose. All he could be sure of was that there was some factor operating in the First Clinic that was absent from the other division, or at any rate was less active there. So eager was he to try anything which might give him the slightest clue, that he introduced into his Clinic the employment of the lateral position in labour, which was followed in the Second Clinic, in place of the dorsal position, which had always been customary in the First Clinic, even though, as he says, he did not believe that there was any advantage in the one over the other, but it might possibly have something to do with the better results which the Second Clinic showed. It is hardly necessary to add that it did not.

And then one day there came to him the news of the death of a friend of his, Professor Kolletschka, who in the performance of a *post-mortem* happened to receive a scalpel wound in his hand. Blood poisoning set in, involving the whole upper extremity and even the chest, the *post-mortem* findings being lymphangitis and phlebitis in the arm, with involvement of the pleuræ, pericardium, and peritoneum, together with a metastasis in one of the eyes.

In a flash of insight Semmelweiss coupled the case of his friend with those of the hundreds he had seen in his lying-in wards, and later, in the *post-mortem* room; here also had there been widespread inflammation and metastases of a nature exactly similar to those that had occurred in the case of Kolletschka, and then there came the irresistible conclusion that even as he had died of blood poisoning, so had the women in the hospital, through the channel of their exposed and wounded genitals. It did not take him long to decide where the poison came from, for he knew only too well how often students and professors alike would pass from the *post-mortem* room to the ward with hands which had at the best been merely washed off with water.

Semmelweiss at once introduced antiseptic measures, causing the students to wash their hands in chlorinated lime before examining the patients, and the results of his precautions are graphically enough described in his never-failing tables of statistics.

In the month of May, 1847, just after his discovery, the mortality of the First Clinic was over 12 per cent.; in the following seven months it fell to 3 per cent., and in the succeeding year it fell to 1·27 per cent., whilst in the Second Clinic it was 1·37 per cent., the first time in the history of the hospital that of the two Clinics the Second had the greatest number of deaths.

That was the first scientific demonstration of the cause of puerperal fever, and it was of course not quite complete, but Semmelweiss soon saw that the infection need not necessarily come from the cadaver. Any diseased patient might, through the agency of the examining finger of her attendant, be the means of infecting others, and so he widened his ætiology to include all diseased matter that might find its way into the genitals.

And now he could account for his carefully observed but isolated facts. Above all, the mystifying difference between the two Clinics in their respective number of deaths was plain to him, for there was no pathological teaching in the training of the midwives; and so they never had the chance of poisoning their hands like the students. He could see why cases of prolonged labour were so liable to be victims of the fever, for the longer the patient was in this state the more examinations she was made to undergo for teaching purposes, and consequently, the more risk she ran of being infected. The same applied to the "street-birth" phenomenon, for such women did not undergo examination at all, having completed their labour.

The temporary decrease in mortality due to the reduction of the number of students on the recommendation of the commission, was due to the lessened chances of infection of the patients, fewer students meaning less dissection. The subsequent rise Semmelweiss knew to be due to certain changes in the arrangement of his work about that time, by which he carried on an unusual quantity of *post-mortem* work, accounting also for a fact which had been noticed for some time, namely, that whenever a professor in the hospital showed special zeal in pathological work, there was then a rise in the mortality of the First Clinic. In referring to this Semmelweiss says, "Consequently, I must here make my confession that God only knows the number of women I have consigned prematurely to the grave. I have occupied myself with the cadaver to an extent reached by few physicians."

As to throwing the blame on the foreign students, the commissioners were unwittingly quite near the truth, for these particular students happened, as a rule, to do more dissection than their fellows, generally having taken part of their course elsewhere and having to cram an unusual amount of pathological work into their final years in Vienna.

So this was the discovery of Semmelweiss; that puerperal fever was caused by the poisoning of the pregnant or parturient woman by diseased animal matter. He calls it his "Eternally True Doctrine," and his claim has not yet been shown to be excessive, though bacteriology in later years may have defined the details more clearly, and modern antiseptic measures have provided more effective methods of protection.

The spread of his discovery amongst his professional contemporaries was a very tedious and difficult task, and one for which he was preëminently unfitted. He lacked the patience which was so necessary to cope with the opposition, active as well as passive, which his views provoked, and became involved in long and bitter controversies, which soured him and no doubt hastened the insanity which he developed towards the end of his life. He could be drawn into wearying disputes by the most ignorant and unworthy of his opponents, and they did not fail to take advantage of his weakness. But he had friends who fought well for him, though they were often disheartened by his failure to support them, or even give them credit for their efforts; prominent amongst them was Skoda, whose own hand was somewhat against his professional brethren for the scanty recognition accorded his work on percussion.

Even amongst the students in the hospital there was at first a tendency, produced no doubt by the example set by others, to look on his ideas as fads, and one went so far as to disregard the instructions about disinfection of his hands. There was an outbreak of the fever as a consequence, and the culprit received so terrible and unqualified a reproof from Semmelweiss for his criminal levity that the offence was never repeated.

Such is an outline of the work of Semmelweiss, and for my present purpose it is sufficient, as he added nothing very original in his later years. He died in 1865 with his mind deranged, the immediate cause of his death being from the consequences of an infected finger gained in a gynæcological operation. The poisoning spread to his arm and thence to his lungs, and so death came to him in a familiar shape, even as it had also come to his friend Kolletschka.

The actual work of Dr. Holmes on this subject is soon summed up. In 1843 he published a paper entitled, "The Contagiousness of Puerperal Fever," having, as he says, "looked into the best records I could find and inquiring of the most trustworthy practitioners I knew, to learn what experience had to teach in the matter, arriving at the results contained in the following pages."

As the title of his essay indicates, he demonstrates that the fever may pass from one patient to another, especially if it is provided with an agent in the person of the attending doctor, and that is the sum and substance of the paper. How valuable such a demonstration was then will be recognized when one considers that many of the best teachers of his day taught and were perfectly convinced of the fact that the fever was not spread in this manner. It would be superfluous to dwell on the results which would, and did, follow such teaching, and so the influence of Holmes's writings in at least opening the eyes of the profession to the risk of spreading the fever, was of priceless worth.

But there is a literary side to the essay which, of course, one would look for in the work of the author of "The Autocrat"; it is found in the clearness and vigour of the style, the orderly marshalling of the most essential facts, in the warm-hearted sympathy with suffering, sympathy which brought down his scathing denunciations on those who, by their disregard of the knowledge and experience of others, were the source of disease and death.

He had not, however, the clear and definite conception of the cause of the fever that Semmelweiss had; it was hardly possible that he should, for at best his knowledge was only gathered from others; he had not grappled with the problem as Semmelweiss had, in the ward and on the *post-mortem* table. And that is the difference between the work of these two men. Semmelweiss gave his whole life to it, observing and thinking for himself; Holmes used his literary powers to concentrate effectively the scattered, and to that extent weakened, labours of others.

Case Reports

OMENTAL CYSTS

AT the Canadian Medical Association meeting held in 1905, a case of mesenteric cyst[1] was reported by the writer. Recently a cyst of the omentum has come under his observation, and the following is a report of the case:

A negro, W.J., was admitted to the St. John General Hospital on the evening of January 26th, 1910, suffering from an acute abdominal condition which was thought to be probably appendicitis.

The patient was a strong, well-grown man, twenty-two years of age, who was born in Antigua, West Indies, where he had lived all his life except the last two years, which had been spent in St. John, his occupation being that of a mill labourer.

The previous history of his health was most satisfactory, as he had had no illness of any moment, no injury, nor had he suffered from abdominal pain or discomfort; he had not observed any lump nor area of tenderness in the abdomen.

On January 24th, while he was turning over in bed preparing to getting up to go to work, he felt a pain on the right side of the lower abdomen; upon standing up the pain increased, and he was soon compelled to lie down again. His suffering continued, necessitating his remaining in bed until his admission to the hospital on the 26th, two and a half days after the onset of illness. There had been no vomiting, and the bowels had moved naturally. On admission to the hospital, his temperature was 101·8°, pulse, 100; the abdomen was painful over the right lower quadrant and there was rigidity, especially over this area, but no mass was palpated. The condition of the chest and urine were normal.

Soon after admission the abdomen was opened in the right iliac region and a small amount of free peritoneal fluid escaped. The appendix was found to be elongated and contained fæcal material. It was removed. To the inner side of the cæcum a dark-red tumour was found, which evidently contained fluid. It extended well upwards. A small area of the peritoneum, covering

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Read before the Canadian Medical Association by Murray MacLaren, M.D., M.R.C.S., St. John, N.B.

the cæcum was thickened, no doubt due to contact with the cyst. The incision was closed and a second opening was made through the right rectus muscle for about two inches above and two inches below the umbilicus and the tumour was turned out. It was found to be a cyst of the omentum, about five and a half inches long, and resembled the heart somewhat in shape, colour, and appearance, as distended vessels of the omentum ran over it. The upper border of the cyst was near the greater curvature of the stomach on the right side.

It was removed by placing a series of ligatures on the omentum and cutting away the tumour. The cyst was situated within the folds of the omentum, and its contents consisted of a yellowish serous fluid, blood-stained, and some blood clots. There was no pedicle. No torsion of the tumour was noticed when it was withdrawn from the abdomen, although it might have been present. The abdomen was then closed in the usual manner. The patient made an excellent recovery and was discharged from the hospital twenty-four days after the operation.

Dr. A. G. Nicholls, pathologist to the Western Hospital, Montreal, examined the cyst and reports as follows:

"The material, as received for examination, had been preserved in formalin solution. It consisted of one main cyst, five and a half inches long by three in depth, by three in the antero-posterior diameter, to which were attached one or two tags of a thin, only slightly fatty, omentum. The omentum itself appeared to be normal. The cyst was situated in the substance of the omentum; the surface was smooth, presenting numerous vessels and thin, scanty deposits of fat, recalling an attenuated omental tissue. On cutting into the sac, the interior was smooth, somewhat mottled with dark grayish patches (presumably areas of blood pigmentation, modified by the action of the preservative) with one or two shallow prominences or thickened patches, recognizable mainly by touch. Over a considerable portion of the inner surface of the wall was a membranous deposit of friable character and yellowish-white colour, which stripped off readily in thin sheets. The wall of the sac was for the most part quite thin except at one place, where the thicker tissue contained a subsidiary cyst the size of a walnut and some dilated vessels, one of them thrombosed. At one portion of the wall, also, a small cavity was found having a distinct fibrous wall and containg red blood clot.

"Microscopic sections were made through the wall of the cyst in three different places, namely, through the thin part, through two of the flattened nodes, through the thickest portion of the wall containing the dilated vessels, and also through the white membrane.

"The wall of the cyst was composed of omental tissue, modified only to the extent that the component tissues were compressed and consolidated. There was no evidence of a lining epithelium. There was, however, some evidence of inflammation in that the vessels were dilated and congested and there was a moderate amount of round-celled infiltration. The thicker areas which were examined showed omental substance with thrombosed vessels. There was considerable blood pigment also lying free and in the cells. One or two clusters of bacteria (probably cocci) were also detected. The white membrane proved to be fibrin in which a few leucocytes were entangled.

"The cysts of the great omentum are cystic lymphangioma, dermoids, parasitic, gas cysts, hæmorrhagic, serous, and chylous cysts. The first four can certainly be excluded. The history and previous examination of the case would assist in determining the presence of serous or chylous cysts.

"Owing to the fact that blood pigment was present in the wall of the cyst and that there was a deposit of fibrin and leucocytes within it, I would conclude that the cyst in question was a hæmorrhagic one which had undergone a slight amount of secondary and reactionary inflammation."

From this report it will be noted that the cyst wall was not a true capsule, but was made up of compressed and consolidated tissue, as might be expected in such cases of hæmorrhagic origin.

Dr. Nicholls states that the hæmorrhagic cysts are due to the occurrence of massive hæmorrhage into the loose substance of the omentum. This produces at first a tumour-like mass known as hæmatoma. The most frequent cause of this appears to be inflammation of the omentum (epiploitis), which is usually secondary to inflammation of the peritoneum or some of its contained viscera. Appendicitis and salpingitis appear to be of the most importance in this connexion. The explanation probably is that the inflammation leads to congestion and œdema of the omentum, followed by fatty degeneration or necrosis of the vessel walls, and subsequent rupture. After a time the pressure leads to the formation of an area of condensation around the mass or pseudo-wall. Then the blood is gradually absorbed, the pigment carried off, and a clear, somewhat brownish or blood-stained fluid left. Other causes of the formation of blood-cysts are hæmorrhages into areas of fat-necrosis (in cases of pancreatitis), tumours, and hæmophilia. There is nothing, however, to indicate the presence of any of these causes of omental hæmorrhage in this case, nor is there a history of distinct trauma.

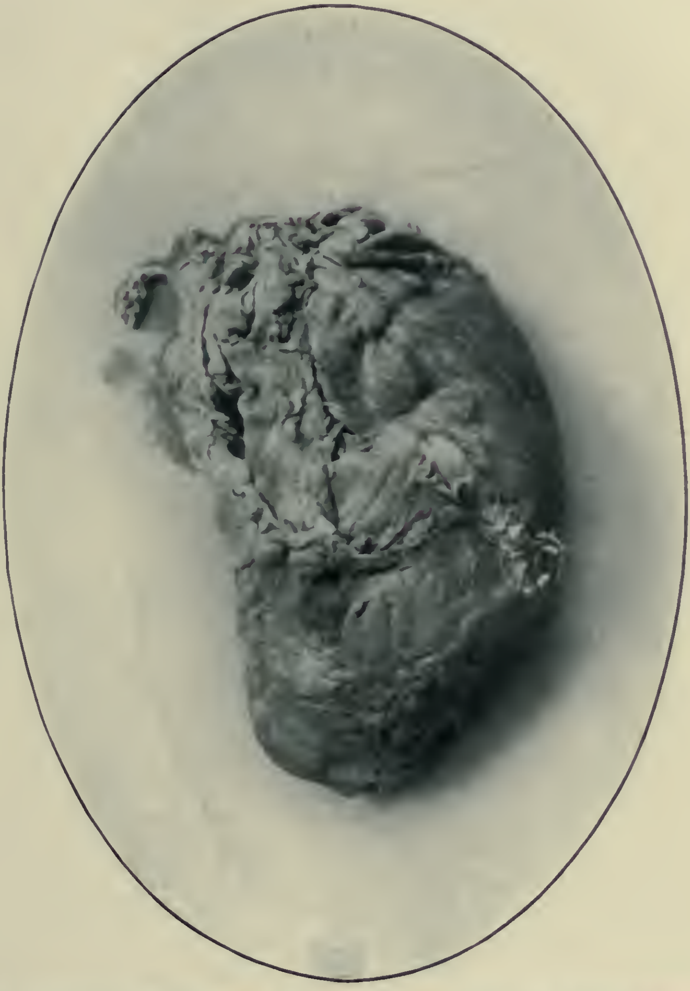
The man's occupation consisted of lifting and carrying bundles of wood in his arms, and necessarily there would be frequent knocks on the abdomen, which might account for the origin of the cyst. This, however, can only be a matter of conjecture.

In several reported cases of omental cyst there is a history of trauma. Cotman[2] has reported a case of hæmorrhagic omental cyst following an injury: The man while riding a bicycle had received a severe blow on the abdomen from the shaft of a cart. At the operation, the cyst, which contained acid-smelling fluid, was found to communicate with the stomach. The communication with the stomach was probably secondary to the formation of the cyst.

The sudden attack of pain in the abdomen, as my patient turned over in bed, followed by elevation of temperature and evidence of secondary inflammation, may have been brought about by torsion of the cyst, although it was not observed at the time of operation.

Omental cysts are rare. They occur at various ages, those in young children being regarded as congenital. They are more common in females than in males. Fort,[3] in a review of the subject, found twenty-one reported cases, his own making twenty-two. According to Hasbrouck,[4] true cysts of the great omentum are those which lie entirely within its folds and not those which may be attached to and are external to it. An escaped ovarian cyst which may become attached to the omentum cannot, of course, be considered a true omental cyst. Hasbrouck found thirty-four reported cases of cysts of the great omentum, but excluded a number of these on the ground that they were attached to the omentum by a pedicle or otherwise, and were not contained within the cavity of the omentum. Under this classification, his case forms the twentieth reported. The first case of omental cyst was reported by Gardned in 1852.

It is rather striking that the occurrence of cysts of the omentum is not of much greater frequency, having in view its anatomical structure and position, forming as it does a large serous sac and lying immediately behind the anterior abdominal wall. This sac, therefore, one might suppose, would frequently become distended from inflammatory conditions within the abdomen or from injuries



Cyst of Omentum Hæmorrhage in origin. To illustrate Dr. MacLaren's article.

to the abdominal wall, but such is not the case. With tubercle scattered over the intestines and omentum and a copious collection of free fluid in the abdominal cavity, the omental sac does not become distended with fluid.

To partly account for this one may bear in mind that in the adult life the folds of the omentum frequently more or less blend, and to some extent obliterate the sac, and that one function of the omentum is to absorb abdominal fluids, leucocytes, and bacteria.

The symptoms produced by such cysts are variable. It may be generally stated that, while of small size, they give rise to few or no symptoms, as is the case with ovarian and other cysts. It is when they become enlarged that symptoms arise, caused by the mechanical effects of pressure or, sometimes, by the development of secondary inflammation.

References:

1. MacLaren—*Mont. Med. Jour.*, December, 1905.
2. Cotman—*Brit. Med. Jour.*, May 24th, 1902.
3. Fort—*Annals of Surgery*, March, 1907.
4. Hasbrouck—*Annals of Surgery*, August, 1908.

I should like to ask if any other medical man has found these results from diphtheria antitoxin. My experience was with three cases, females aged nineteen, fifteen, and eleven, the first having had an injection of antitoxin about nine years previous. The different cases had received one thousand units preventative, two thousand curative, and five thousand curative. About five hours after the injection they complained of intense pains in the region of the heart; and the parents expressed the fear that the children were going to die. I had an opportunity of seeing the first case. Symptoms began about five hours after the injection and lasted three or four hours. There was some rash about the time the heart symptoms began. Patient would cry out with fear and pain, and clutch any near object. Pulse was one hundred and thirty and over. Attack would last about five minutes, and in the intervals there was comparative comfort, but rapid pulse. Patient was not hysterical, and was perfectly rational between attacks. Attacks recurred every few minutes. In about three hours the severity lessened and patient fell asleep. Next day she was feeling well with the exception of the rash, which lasted for about thirty-six hours. With the same lot of serum three others developed a severe rash, about five hours after the injection, which lasted from twenty-four to thirty-six hours.

Jacquet River, N.B. R. L. Ellis.

Editorial

MEDICAL JOURNALISM IN CANADA

DURING the first half of the nineteenth century efforts had been made to establish medical periodicals in Canada. The names of those who inaugurated medical literature in Canada are, Tessier, of Quebec; Badgley, Sutherland, Hall, and Macdonnell, of Montreal. These were the pioneers of medical journalism in Canada.

The first of these journals was published in 1826 at Quebec. The honour for its first venture is due to Dr. Tessier. The journal was called *Le Journal de Medecine de Quebec*, and was published from January to October, 1827; owing to the death of the editor, Dr. Tessier, one volume was all that was published.

It was not until seventeen years had elapsed that the second attempt at medical journalism took place, when *The Montreal Medical Gazette* was issued by Dr. Francis Badgley and Dr. William Sutherland. Dr. Badgley's name was at that time prominent in the medical profession, and it was largely through his efforts that the medical profession in Montreal, after seventeen years, followed the example of their *confreres* at Quebec and formed themselves into a society. Later, he was instrumental in forming the county societies, and he succeeded in inducing the various medical institutions to send in their reports for publication in his journal. He also was the chief mover in forming a second medical school in Montreal, the Montreal School of Medicine and Surgery. When Dr. Badgley commenced the publication of his journal there was but one chartered medical school in Canada; there were no medical societies; and no medium of expression and communication for medical men. Dr. Sutherland and Dr. Badgley taught in this school.

The journal appeared on April 1st, 1844, and though it had a brief existence, namely, from April 1st, 1844, to May 1st, 1845, it had already received flattering notices in the English and American journals. Throughout the various numbers the well-known names of Drs. Crawford, Arnoldi, Scott, and others, appeared. Although Dr. Badgley called it an independent paper, both editors were teachers of the new schools, which could not but bias the tone of the editorials, and this hastened the advent of a second journal, which was called *The British American Journal of Medicine and Physical Science.* Dr. Hall, lecturer on chemistry in the medical faculty of McGill University, was editor, and associated with him was Dr. R. L. Macdonnell, lecturer in institutes of medicine.

Dr. Hall was a man of good judgement and culture, and fearless in uttering what he thought was right. Dr. Macdonnell had been for many years the editor of *The Dublin Journal of Medical Science.* With the publication of the second volume, Dr. Macdonnell retired from the editorship, although he continued to write for the journal. The first number of his new journal was circulated in Montreal on Saturday, May 19th, 1845. On the publication of this new journal *The Montreal Medical Gazette* ceased publication. Although Dr. Hall had given his services to the journal free, yet, like most of the Canadian medical journals, it had by the end of five years fallen deeply into debt, partly through non-payment of subscriptions.

Dr. Badgley, who had become one of the contributors to Dr. Hall's journal, urged the formation of a medical association for the province, based upon that of the Provincial and Medical Association of England, which, for the small subscription of one sovereign, would furnish to each of the members a copy of *The Provincial Medical and Surgical Journal.*

Dr. Hall edited *The British American Journal of Medical and Physical Science* for seven years; by the end of that time he was obliged to give it up owing to financial difficulties. If Dr. Badgley's scheme had been carried out at the time, there is hardly any doubt that Dr. Hall would have continued to edit the journal. But it was not until the year 1867 that Dr. Badgley's project in part was successfully carried out. It was at a meeting held in Quebec, in Laval University, that a Provincial Medical Association was formed. The first meeting was held in Montreal in 1868 with Dr. Tupper as president.

Another journal was started in 1852 by Dr. Macdonnell and Dr. David, called *The Canada Medical Journal and Monthly Record of Medical and Surgical Science*. It ran for a year, and was followed in 1865 by a journal of the same name, edited by Dr. Fenwick and Dr. Campbell. Eight volumes of this journal were published. The next journal was *The Canada Medical and Surgical Journal*, edited by Dr. Fenwick. Sixteen volumes of this journal were published from 1872 to 1888, when its name was finally changed, in 1888, to *The Montreal Medical Journal*, edited by Drs. Ross, Roddick, and Stewart. This in turn was transformed into THE CANADIAN MEDICAL ASSOCIATION JOURNAL in 1910, and with it was incorporated *The Maritime Medical News*. The present number opens the second volume of the new series.

"NERVE RECURRENCE" AFTER SALVARSAN

NOW that the early stormy welcome to "606" has subsided, and we are able to look upon Ehrlich's work and its results without the "Begeisterung," which threatened to obscure our vision in the beginning, it is well, perhaps, to reassemble our facts and reform our conclusions, lest haply these be found faulty. Here, however, is not the place save in one particular, a particular back of which lies the whole truth of "606" therapy and an answer to all or nearly all our doubts. This is the question of so-called "nerve recurrence."

By nerve recurrence we understand a sequence of events somewhat as follows. A patient in florid secondaries receives a dose of "606," generally intramuscularly. The signs of disease disappear, but in six or eight weeks the individual is found to be suffering from a paralysis or paresis of one or other of the cranial nerves, generally the second, third, fourth, sixth, seventh, or eighth. This may gradually disappear with or without the aid of further anti-syphilitic treatment or it may remain permanent. This is the "Nervenrezidiv," which, according to Kreibach, holds the centre of the stage in syphilis therapy for the present year. By the increase or decrease in its incidence will "606" therapy wax or wane.

The number of cases published is small, no doubt smaller than the actual facts, and the largest series appears from Finger's Clinic, where "606" has never been enthusiastically welcomed. It is worth emphasizing that these cases occur only in secondary syphilis and chiefly after intramuscular injections.

In seeking an explanation there are obviously three possibilities. These changes may be due to "606" or to syphilis or to both. It is significant that, in spite of the great number of cases treated by "606" during the past year and a half or two years, but few cases have shown this type of lesion, and that very large doses of "606" in animals have failed to produce an arsenical neuritis. This would argue against the nerve recurrence being a pure "606" intoxication product.

It is further significant that these cases occur almost without exception in secondary syphilis of the active florid type, that they are in most instances cured by mercury or potassium iodide or, more important, a second dose of "606." It is even stated (Fehr) on good authority that two to three per cent. of patients suffering from secondary syphilis show changes in the eye grounds, and Rille states that affections of the ear are even more common. It is not unlikely, therefore, that "606" has nothing to do with these lesions, and that merely because we now pay more attention to the condition of the eyes and nervous system generally, as a result of atoxyl blindness and Ehrlich's warning, we find these changes where formerly we overlooked them. Yet "606" may not altogether be blameless. Whatever the reason advanced, these cases are more frequently noted than formerly. Some do not improve with antisyphilitic remedies; they occur, as already noted, after intramuscular and not after intravenous injections, therefore, in those cases where the arsenic is but slowly absorbed over a prolonged period. Arsenical neuritis and atoxyl blindness serve to show how prone arsenic is to attack the nervous system.

A cautious man would say that "606" injures the nerve or nerves and that the spirochæte attacks this *locum minoris resistentiæ*. Inasmuch as the nerves involved are those which traverse bony canals, a tempting hypothesis is to consider that the drug fails to reach the intracanacicular part of the nerve and in consequence spirochæte escape and later increase and injure the nerve.

The truth evidently lies deeper than the surface. To draw a conclusion from such a contradiction of facts is difficult, but the facts alone are well worthy of note. Lesions of the cranial nerves in secondary syphilis are much commoner than we have so far supposed, and this is irrespective of therapy, but inasmuch as the increase in reported cases has been so great since the free use of "salvarsan," this drug may have some connexion with that increase. Most cases improve with or without the further use of "606"; these are probably purely the result of syphilis. Some do not; these are perhaps the result of arsenic.

So runs the argument. Such, in the main, is the sum total of some one hundred and thirty-four papers published during the last year and dealing with "606" and the nervous system. Whatever the case may be, it is the first strong argument against "salvarsan," and one which, on that account, deserves to be kept before us in the everyday treatment of syphilis, and demands the more general examination of the cranial nerves before administering this drug.

SIR SAMUEL WILKS

THAT wonderful old hospital, Guy's, with its rich traditions of the past, with its long list of honoured names, has this last month added another illustrious name to its roll of departed workers. By the death of Sir Samuel Wilks, which occurred November 8th, in his eighty-eighth year, the profession has lost another of its lights. All the old Guy's men will mourn the loss of Sir Samuel Wilks, for Guy's hospital was to him a passion; he was proud of the splendid work his hospital had done, and in the Reports of the Hospital from 1836 to 1886 is recorded much of his life work. When in 1897 a complimentary dinner was given to him on the occasion of his being made a baronet, over three hundred old Guy's men came from all parts of the country to attend it. So great was the enthusiasm displayed that Sir Samuel Wilks was greatly stirred by emotion when he rose to return thanks to his many hosts.

Sir Samuel Wilks was a great personality to the very end. No man can for long hide his true character from the keen eyes of his fellow-workers. Sooner or later they will find him out. In all the recent biographical notices of Sir Samuel Wilks the keynote sounded is the intense admiration and love he inspired, a high respect for his honesty, and his scorn of humbug. He was no self-seeker; he abhorred advertising. The idealism of medicine was real to him: "Medicine at the best," he said, "was a high intellectual pursuit." Striving for money was distasteful to him. His simplicity of character held nothing small, nothing even remotely underhand was in his nature. The immense amount of valuable work which he accomplished during his lifetime is shown by the valuable bibliography prepared and published by the editors of *Guy's Hospital Gazette.*

OPEN-AIR SCHOOLS

THE new movement in bettering the condition of sickly children, which is now attracting the attention of educators in Great Britain and the United States, was first started seven years ago in the suburbs of Charlottenburg, near Berlin. The object of the founders was to have a school where children could be cured and taught at the same time, and the children selected were those who were not strong enough to keep up with the other pupils attending the schools. Although this movement of the open-air schools was not designed for the use or the treatment of tubercular children, it has now been taken up by the tubercular section of the Massachusetts Medical Society. At the June meeting there was held a symposium on the subject of outdoor schools and open-air rooms for children. The meeting was largely attended by superintendents of schools and others interested in the subject. Prior to this meeting a circular letter had been sent out by the tuberculosis committee of the Massachusetts Medical Society to members of the associated committees, Massachusetts school superintendents, and Boston school physicians, as to the development and management of fresh-air rooms and outdoor schools. Of two hundred answers to the letter one hundred and ninety-six were in favour of such rooms.

The need of open-air rooms in all school buildings is now pretty generally recognized, not only in Germany, but in England and the United States. It is more and more evident that all systems of artificial ventilation are not what they should be. Of the places where fresh air is needed, the school is probably the most important. There children are crowded together for hours at a time. In every large school there are a number of tuberculous children, with the disease either in the lungs or in some part of their body. There are, likewise, in every school a number of children generally described as "delicate." With the diseased children removed from the crowded school-room to the open air, the healthy children are less exposed to the dangers of infection. The fresh-air school is as yet in its infancy, but its success has been so marked and its possibilities are so great that no school should be without its open-air rooms.

PUBLIC HEALTH ASSOCIATION

THE first meeting of the Canadian Public Health Association, which was held in Montreal, December 13th, opened auspiciously in the presence of the Governor-General, Mr. R. L. Borden, Sir Lomer Gouin, the premier of the province of Quebec, Mr. Martin Burrell, the minister of agriculture, and Dr. Guerin, mayor of Montreal. In his reply to an address the governor-general urged the necessity of such an association in the face of the epidemics of typhoid fever, diphtheria, and small-pox, which were continually recurring, and of the enormous infant mortality in the cities. Mr. Borden informed the meeting that it was the purpose of the government to give earnest consideration to the problems with which the Association was immediately concerned, and he realized the necessity of co-operation between the Dominion and provincial governments to prevent the pollution of water supplies. Mr. Burrell led the Association to believe that the Dominion government would soon have a fully equipped department for dealing with matters of public health, to co-ordinate the work which was being done by the federal, provincial, and municipal authorities. Sir Lomer Gouin announced that his government had plans in readiness for the dividing of the province into ten districts which would be under the supervision of specialists in hygiene. These, he said, would be chosen from the English and French universities. He also expressed the hope that he would in a short time be able to announce the establishment of several hospitals for the treatment of tuberculosis. The papers which were read during the succeeding days of the meeting all bore upon the work of the Association, and those who laboured so diligently for its establishment may be well satisfied with the results which have come so quickly.

If the papers read at the various meetings are acted upon, there are prospects for a better condition of public health matters in Canada. The great need of to-day is to popularize interest in the public health; and it is such meetings as these which have just closed their first congress, which will keep alive some general interest in sanitation and will also remind the public of facts worthy of its attention. In these days we are hearing a great deal about epidemics, we have newspaper articles and lectures about these various epidemics which occur in the great cities of the Dominion. Ottawa has scarcely recovered from the severe typhoid epidemic which swept that city in the early part of the year, and resulted in over one thousand people being stricken down, when the health authorities have to deal with a small-pox epidemic. Montreal, with its dirty streets and ill-kept lanes, is not much better from a sanitary point of view. Many of the tenements in the poor districts are as overcrowded as when Osler cited the local outbreak in 1877 in the House of Refuge, where the overcrowding was so great that at night there were not more than eighty-eight cubic feet of space to each person. The city dust is notorious. Yet it would seem as if the people took no notice of dust, or that dust should be removed without being disturbed. One of the greatest sanitary problems now before our authorities is city dust. There is not only now the dry and windy days of fall to contend with, but the constant passing of rapid moving automobiles over a dry, uncleaned area, stirs and sets loose bacteria in the air.

The subject of preventive medicine is as yet in its infancy, but it is receiving greater attention to-day than ever before, not only from physicians but from the laity as well. In Montreal, the two universities, McGill and Laval, are giving special courses on public hygiene. It is generally recognized that this special training is absolutely essential for all inspectors of public health, and it is of the utmost importance that a full and complete knowledge of all matters dealing with this subject be taught in every medical school, and that inspectors should be carefully selected.

In an editorial entitled, "The Quebec College," in the December number of the Journal the cost of auditing the books of the College of Physicians was given as two "thousand" dollars. It should, of course, have been two hundred.

The National Sanitarium Association has created a medical staff consisting of Drs. H. B. Anderson, W. P. Caven, J. T. Fotheringham and Harold Parsons. These physicians will visit the institution under the association's control at fixed dates, and it is expected that their co-operation will greatly strengthen the future medical administration.

We take pride in saying that a new department has been added to the Journal under the title, "Men and Books." It will be conducted by Sir William Osler, and will contain bibliographic and biographic notes of passing interest. This great service is further proof that this distinguished writer and physician still cherishes his Canadian friends. To those who are interested in the intellectual aspect which medicine presents, these notes are bound to yield profit in the pleasure which they will give.

Montreal is ringed round with small-pox. The disease exists in nearly every neighbourhood, and occasional cases crop up in the city itself. What makes the situation more alarming is that the type of the disease is very mild, and this absence of immediate danger is the worst danger of all. These mild epidemics have a habit of blazing up in fury, no one can tell why. Since the great outbreak of 1885 a new generation has grown up, which is only very imperfectly vaccinated, and the material is ready for a fresh epidemic. This is a business which falls within the duty of every physician in his private capacity. The health authorities are doing much, but they cannot do all without the help of the practitioner.

BLACK antimony and canned corn are considered in two recent bulletins from the laboratory of the Inland Revenue Department at Ottawa. No. 226 deals with canned corn. Of one hundred and forty-six samples purchased throughout Canada in the months of March, April, and May, 1911, all were found to be in an excellent condition of preservation. In weight and in the character of the contents of the cans there was great uniformity, which suggests that the work of canning this food product is carefully and systematically conducted. The chief points to be noted in this report are the frequent presence of acid sulphite of lime and the use of a non-sugar sweetener, usually saccharin, in many samples. The acid sulphite was found in 50 per cent. of the cases inspected; saccharin in 20 per cent. As sulphurous acid can exist only in minute quantities when the corn is ready for the table, and as saccharin, in the amounts used in the samples, has not conclusively been proved dangerous to the health of the consumer, the report recommends that when either is used a statement of such fact shall appear on the label. Bulletin No. 225 shows that of the samples of black antimony examined, 50 per cent. were adulterated, 27 per cent. containing no antimony at all. It was evident from the adulteration—metallic iron, silica, and carbon (graphite)—that the manufacture in many cases was knowingly fraudulent.

Book Reviews

DISEASES OF THE STOMACH AND UPPER ALIMENTARY TRACT. By ANTHONY BASSLER, M.D. Illustrated with half tone and line text engravings and 56 full-page half tone plates, plain and in colours, from original photographs and drawings, pp. 836. F. A. Davis & Co., Philadelphia.

This important book which was noticed in the June number of the JOURNAL has for a variety of reasons gone unreviewed until the present moment. This delay is of less importance in the case of a book such as this, which is of permanent value, than it would be in the case of a book whose value was only temporary. "Bassler on the Stomach" has a general air of authority. It contains over eight hundred pages. It is copiously illustrated with text engravings and plates in half tone and in colour; and all the illustrations are from original drawings or photographs. Also, Dr. Bassler writes as one having authority in this most complex division of medicine, which is, as the author says in the preface, so indissolubly connected with the broader field that it can never be established as a branch apart. There is everything of value in the book which is in any other book, and much else besides. The section which deals with the use of Rœntgen's rays in diagnosis, and with gastroscopy and œsophagoscopy, illustrated as it is with clear and even beautiful plates, will perhaps be considered the most important as it is also the newest. By every test which we have been able to apply to this book, by reason of what it contains, as well as by reason of what it does not contain, proves itself to be one of which the profession will profit much. It is not merely made: it is written by a writer, and illustrated by artists.

SENSIBILITY OF THE ALIMENTARY CANAL. By ARTHUR F. HERTZ, M.A., M.D. (Oxon.), F.R.C.P. 83 pages. London, Oxford Medical Publications. Toronto, D. T. McAinsh & Co., 1911. Price, $1.50.

This book is a reprint, with certain additions, of the Goulstonian lectures as they were delivered in March before the Royal College of Physicians, and published in the *Lancet* in April and May. A division in the chapters has been substituted for the original divisions in the lectures. The conclusion at which Dr. Hertz arrives is, that the alimentary canal from the commencement of the œsophagus to the junction of the rectum with the anal canal is completely insensitive to tactile stimulation. This simple thesis is elaborately worked out with ample reference and fine literary skill. Quite apart from the information contained in the book the reading of it is a pleasure.

THE CONQUEST OF NERVES. BY J. W. COURTNEY, M.D. The Macmillan Company, New York, 1911.

Dr. Courtney follows the practice which is now so common amongst writers upon medical subjects, even the most technical, of dedicating their books to their wifes. The book itself is a pseudo-scientific compendium, of much dulness in spite of the fine language in which it is written. Any writer is bound to be dull who permits himself to give advice upon so trivial a matter as the clothes which one should wear when he is walking: "The clothing worn on these walks should be appropriate to the prevailing weather conditions, and so fashioned that the freest possible motion is allowed to both legs and arms."

CLINICAL SYMPTOMATOLOGY. BY ALOIS PICK, Professor of Medicine, University of Vienna, and ADOLPH HECHT, Pediatrician, St. Anne's Hospital, Vienna. Translated under the editorial supervision of KARL KONRAD KOESSLER, M.D., University of Vienna. 833 pages, price $6.00. New York: D. Appleton & Co. Toronto: D. T. McAinsh & Co., 1911.

This citation which we have made from the title page is in itself sufficient to indicate that we have to deal with an important book. The matter of it, however, is not confined within the somewhat narrow limits of symptomatology, as treatment appears to receive almost equal consideration, and prescriptions abound throughout the book. The volume is divided into twenty-four chapters. General symptoms are first described, then the disturbances of the heart action; disturbances of respiration; pain in the chest; cough; the sputum; vomiting; disturbances of indigestion; examination of the stomach contents; disease of the intestines; examination of the abdomen; hæmorrhage; examination of the blood; dropsy. In the somewhat more general class, the authors consider the severe general infections; autointoxication; headache; loss of consciousness; sleeplessness, and vertigo. The book is a masterly compendium of medicine as it is practised and taught in Vienna.

A HANDBOOK OF MEDICAL DIAGNOSIS IN FOUR PARTS. By J. C. WILSON, A.M., M.D. Third edition, 418 illustrations, 14 plates. J. B. Lippincott Company, Philadelphia and London, 1911; Charles Roberts, Montreal.

This book is the third edition of Dr. Wilson's work. It contains three prefaces; the first written in September, 1909, the second in March, 1910, and the third in June, 1911. Acccordingly, three editions have been demanded in less than two years; and when three editions of a book containing over fourteen hundred pages are exhausted in a short time that book must have merit. Much of the present volume is new. The articles upon epidemic anteropoliomyelitis, beri-beri, pellagra, typhus fever, and relapsing fever, have been rewritten. Brief new studies of tabardillo, which is the spotted fever of the old writers, and Brill's disease have been introduced; and many sections have been recast and enlarged. Dr. Wilson is professor of the practice of medicine and clinical medicine in Jefferson Medical College, and physician to its hospital. He is also physician to the Pennsylvania hospital, and the book may be taken as the expression of the best thought of the Philadelphia school.

CLINICAL DIAGNOSIS. A text-book of clinical microscopy and clinical chemistry. By CHARLES PHILLIPS EMERSON, A.B., M.D. Third edition; 742 pages, illustrated. J. B. Lippincott Company, Philadelphia and London: Charles Roberts, Montreal.

This handsome volume comes to us from Messrs. Lippincott. In type, paper, and binding it is a comfort to the eye and a temptation to read. The work is a product of the Baltimore School; indeed it is dedicated to William Osler, M.D., and the author was himself a pupil and assistant of that master in medicine. This is the third edition, and in the three prefaces, which are quite properly included, the progress of the work is indicated. The first was composed in 1906, and is tinged with that taste and feeling which is always the mark of good writing. The book, we are told, arose out of the course of study which is followed in Johns Hopkins, and the object of the course itself is not so much to impart knowledge as to raise the efficiency of the student. The preface to this edition bears the date, May, 1911, and is really a delicious bit of writing, as it records the history of clinical chemistry since those days, fifteen years ago, when it was literally revelling in its wealth of "new discoveries," until the present, when the patients are enjoying peace whilst the hospital chemist and his students are eating their own test meals and studying their own metabolism to find out just what the "normal" really is. The "general chemist," like the general practitioner, is coming into his own again. The first edition contained an introduction by Dr. Osler, and it also is reproduced. It reminds us that it was Dr. Emerson, who, in 1900, in succession to Dr. Lazear, organized those clinical courses which have made Johns Hopkins so famous. Of the book itself we need only add that it is in large measure new; it contains all that is reasonably certain, and describes all methods which have been well tested; it does not aim to "mention" work merely because it is "recent." The book is "written" out of the author's own mind, it is not merely made; and this comment will serve better than any formal "review" to indicate the high esteem in which we hold it.

SUGGESTIVE THERAPEUTICS, APPLIED HYPNOTISM, PSYCHIC SCIENCE. By HENRY S. MUNRO, M.D. Third edition, revised and enlarged. C. V. Mosby Company, St. Louis, Mo., 1911. Price, $4.00.

The place which this book is likely to occupy in the world of thought is well indicated in the dedication: "To the memory of my mother, whose beautiful example and most frequent suggestion, 'Be sure you are right and then go ahead,' has given to my life whatever dynamic quality characterizes this book." Certainly the author has gone ahead; but we cannot affirm that he has been equally dutiful in being sure that he was right. Dr. Munro has all the enthusiasm of an apostle. "For eight years," he tells us, he "toiled, and plodded, and prayed . . . by making a personal canvass from office to office . . . organizing groups of physicians to witness the demonstration and elucidation of practical methods of the employment of suggestion." The most obvious results are obtained from the use of suggestion whilst giving an anæsthetic, and the experience of those two excellent women, Alice Magaw and Miss Henderson, is quoted. Their practice is to "talk the patient to sleep." Our own experience is that "psycotherapy," when employed indiscriminately outside the field of nervous and mental diseases is very apt to pass into charlatanism and quackery. "The theory of dormant reserved subconscious energy, and the practical methods of its utilization in heightening the resisting powers of the individual," the author says was taught by him as far back as 1899. It is proper to add that this is not a fresh discovery. It is much older even than the days of Marius the Epicurean. Those who believe in therapeutics by deception will find much temporary comfort in this book; but they will come in time to realize "what a tangled web they weave, when first they practise to deceive."

ELECTRICITY, ITS MEDICAL AND SURGICAL APPLICATIONS, INCLUDING RADIOTHERAPY AND PHOTOTHERAPY. By CHARLES S. POTTS, M.D., University of Pennsylvania, with 356 illustrations and six plates. Lea & Febiger, Philadelphia and New York, 1911.

The author of this book lays claim to a new method. "Instead of devoting one section exclusively to the constant current, another to the static current, and so on," he tells us that he "has grouped these modalities according to the effects produced." The term, "modalities," apart from metaphysics and logic, is a new one to the present writer, and readers are always suspicious of a book upon medicine in which a pseudo-philosophical jargon is employed. If the author meant "methods," he had much better have said so. This question of terms is not unimportant, since words really have a meaning and confusion of words means confusion of facts. The author protests, too, that "this method is scientific, instead of empirical," forgetting that all science is empirical, that is, based upon experiment and observation. The book itself is the most comprehensive which has yet appeared in English upon electricity in its medical aspects. The first section, which is devoted to electrostatics, the electric current, electro-magnetism, and the applications of electro-magnetic induction, contains an accurate account of these phenomena, such as may be found in any good text-book designed for the use of elementary students; and yet from the few pages devoted to the alternating current, for example, only the vaguest possible notion could be obtained. Upon the uses of electricity in medicine the book is more authoritative, but the author contents himself rather with a record of procedures than with a criticism of their value.

FOOD VALUES. By EDWIN A. LOCKE, A.M., M.D., Instructor in Medicine, Harvard Medical School, (1911); 100 pages, cloth, $1.25. New York: D. Appleton & Company; Toronto: D. T. McAinsh & Company.

We desire to call special attention to the tables of values which this book contains. This information is often desired, and has not hitherto been readily accessible.

Books Received

A MANUAL OF FEVERS. By CLAUDE BUCHANAN KER, M.D. (Ed.), F.R.C.P. (Ed.). London: Oxford Medical Publications; Toronto: D. T. McAinsh, 1911.

EMERGENCIES OF GENERAL PRACTICE. By PERCY SARGENT, M.B., F.R.C.P., and ALFRED E. RUSSELL, M.D., F.R.C.P.; second edition. London: Oxford Medical Publications; Toronto: D. T. McAinsh & Co., 1911.

TUBERCULOUS DISEASES OF BONES AND JOINTS. By SIR W. WATSON CHEYNE, BART. London: Oxford Medical Publications; Toronto: D. T. McAinsh, 1911.

FOOD VALUES. By EDWIN A. LOCKE, A.M., M.D. D. Appleton & Co., New York and London, 1911; 110 pages; price, $1.25.

RECENT STUDIES OF SYPHILIS, WITH SPECIAL REFERENCE TO SERO-DIAGNOSIS AND TREATMENT. Medical Symposium Series No. 1. Second edition (revised). A Reprint of Articles published in the *Interstate Medical Journal.* Paper, 212 pages. St. Louis: Interstate Medical Journal Co.; price, $1.00.

RECENT STUDIES OF CARDIO-VASCULAR DISEASES. Medical Symposium Series No. 2. A Reprint of Articles published in the *Interstate Medical Journal.* Paper, 216 pages. St. Louis: Interstate Medical Journal Co.; price, $1.00.

UBER NEUROREZIDIVE NACH SALVARSAN und NACH QUECKSILBERBEHANDLUNG. By DR. J. BENARIO. J. F. Lehmanns, Verlag, Munchen, 1911.

DISTRICT NURSING. By MABEL JACQUES. The Macmillan Company of Canada, Limited, Toronto, 1911.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS; Vol. VI., 1911.

THE CARE OF INFANTS AND YOUNG CHILDREN. By A. DINGWALL FORDYCE, M.D., F.R.C.P. (Ed.), 36 illustrations. E. & S. Livingstone, 15 Teviot Place, Edinburgh, 1911.

DISEASES OF THE EYE AND THEIR TREATMENT. By SIR HENRY R. SWANZY, A.M., M.D., D.Sc., and LOUIS WERNES, M.B., F.R.C.S.I. Tenth edition, with illustrations. H. K. Lewis, 136 Gower Street, London, W.C., 1912.

MEDICAL SYMPOSIUM SERIES. (1) Recent Studies of Syphilis, second edition. (2) Recent Studies of Cardio-Vascular Diseases. Interstate Medical Journal Co., St. Louis, Mo., 1911.

ELECTRICITY, MEDICAL AND SURGICAL. By C. S. POTTS, M.D.; 356 illustrations, 6 plates. Lea & Febiger, Philadelphia and New York, 1911.

CASE HISTORIES IN NEUROLOGY. By E. W. TAYLOR, A.M., M.D. W. M. Leonard, Boston, 1911.

CLINICAL DIAGNOSIS. By C. P EMERSON, A.B., M.D. Third edition. J. B. Lippincott Company, Philadelphia and London, 1911.

HANDBOOK OF MEDICAL DIAGNOSIS. J. C. WILSON, A.M., M.D. Third edition, 418 illustrations, 14 plates. J. B. Lippincott Company, Philadelphia and London, 1911.

DISEASES OF THE DIGESTIVE CANAL. By DR. PAUL COHNHEIM. Edited and translated by DUDLEY FULTON, M.D.; second edition, illustrated. J. B. Lippincott Company, Philadelphia and London, 1911.

TEXT-BOOK OF GYNÆCOLOGICAL SURGERY. BY COMYNS BERKELEY, M.A., M.D., F.R.C.P., M.R.C.S., Gynæcologist and Obstetrician to the Middlesex Hospital, London, and VICTOR BONNEY, M.S., M.D., F.R.C.S., M.R.C.P., Assistant Gynæcologist and Assistant Obstetrician to the Middlesex Hospital, London. 720 pages, 392 figures in the text from drawings by VICTOR BONNEY, and 16 coloured plates (1911.) $6.00. London: Cassell & Co. Toronto: D. T. McAinsh & Co.

Res Judicatæ

CONSERVATION OF THE OVARY

THE ovary, or the female sex-organ, consists essentially of an aggregation of germ cells, which early in fœtal life, about the fifth week, make their appearance in the wall of the cœlom, on the mesial aspect of the Wolffian body. These germ-cells are probably not formed *in situ* by any localized metaplasia of the mesothelial somatic cells, which is the older view of their origin. On the contrary, they have probably existed from the earliest stages of the segmentation of the ovum, multiplying with the growth of the embryo, and have at this time become segregated in this situation. They represent in this way the continuity of the germ plasm. So segregated, a structural connexion with their host is determined by the formation and ingrowth of vessels and nerves with their attendant, less differentiated, somatic cells. In this way this aggregation of germ-cells comes to be actually bound together into a compact nucleus or viscus, and so it is that the sex-organ, or sexual gland, is formed. Further changes consist but in cell-mitosis, differentiation, and growth.

At this early stage there is in this organ or gland no recognizable differentiation of sex. The recent work of John G. Clark is of special interest in this respect, as he shows that the earliest appreciable indication of this sex-differentiation is to be found in the differences of blood-supply to the sex-organ; by this difference of blood-supply is the sexual organ first to be recognized as an ovary or testicle.

These primitive germ-cells, or oögonia, as they at first appear, are small, oval cells, with a deeply-stained granular nucleus. They multiply rapidly by mitotic division. According to Louise McIlroy, the first differentiation which takes place among them is the formation by some of these cells of a "capsular epithelium," usually designated the "germinal epithelium," the function of which is mainly protective. The greater number of these germ-cells, however, become ranged in rows or columns, like rows of coins, more or less perpendicular to this capsular surface; this arrangement being probably effected by the ingrowing septa of vascular somatic cells from the area of attachment to the host, namely, the hilum. These cell columns are the so-called Pflüger's tubules, or "cortical cords," concerning the origin of which there has been perpetual dispute. These columns, or cords, are first solid, but later they become tubular, saccular, and convoluted.

The increase in the size of the sex-organ follows simply further inter-growth between these two component parts, the germ-cells in columns or nests growing more deeply inward, while the somatic cells of the host radiate further outward in vascular partitions between them. So is constituted respectively the parenchyma and stroma of the sex-organ.

In the testicle these tubules come to communicate with the Wolffian duct; but in the ovary, though according to Goodall they may extend down to, and even into, the hilum, this communication is not effected, and the ovary remains in the strictest sense a ductless gland.

The early maturation phases of these germ-cells have been carefully studied recently by von Winiwarter, Lane-Claypon, Whitridge Williams, and Louise McIlroy, and chiefly in the embryo of the rabbit, pig, dog, cat, and the human embryo. These researches have shown that in these several mammalian types a similar plan of development is followed: that not only the oöcytes, that is, the cells destined for fertilization, but also the follicle cells, and the numerous interstitial cells of the ovary arise from the oögonia, or primitive germ cells; in fact, that the whole parenchyma of the ovary is derived from this source. The stroma-cells, on the other hand, being as they are somatic cells of the host, are concerned only with support and vascularization.

The oöcytes themselves arise from the primitive germ cells by mitotic division and growth, the chief changes manifesting themselves in the size of the cell and the chromatin distribution in the nucleus. These larger cells increase and multiply at the expense of their fellows, which remain small and are known as "reserve cells," regressive oöcytes, follicle, or interstitial cells. In their further maturation changes these primary oöcytes undergo a long synaptic phase, with only apparent reduction of their chromosome filaments, and reach the stage of the germinal vesicle or resting nucleus only at, or just after, birth. These are the ova, as they exist in the mature ovary.

The later stages of maturation, with true reduction of the chromosome filaments, only take place after extrusion of the oöcyte from the follicle. These stages are brought about by fertilization.

Follicle formation occurs early in the human ovary, before the

The nature of this secretion is not known. The fluid obtained from the Graafian follicle of the cow is simply serous; while from the corpora lutea of the same animal certain luteins, amorphous and crystalline pigments, have been obtained. But these are not peculiar to the ovary. Ferments have been secured from the ovaries of toads and frogs, but these again are found in other tissues. No specific substance has as yet been isolated. The extreme difficulty in the matter is aggravated by the close chemical correlation which is now known to exist between the secretion of the ovary and that of other ductless glands. It appears that the ovarian *succus* may depend for its activity upon a chemical interaction with the secretion of one or other of these related glands. A certain reciprocity obtains between them, partly at least hormonic. In addition, there exists a certain genetic relationship between the ovary and adrenals, through the medium of the Wolffian body; and a phylogenetic relationship between these two and the thyroid, since the latter, Gaskell states, represents the uterus in some of the lower reptiles. Moreover, several, if not all, of these ductless glands arise in connexion with the sympathetic system, the many ganglia of which contribute an internal secretion of their own. A large amount of experimental work, much of it baffling and contradictory, has been performed upon these ductless glands. Their interdependence has been proved, for it has been shown that the secretion of the one acts upon that of the others, and to remove one, permanently disturbs, or even oversets, the equilibrium of all. The entire process is one of mutual control of metabolism, and especially the calcium matabolism, in the body.

The loss of the ovaries means, as we have seen, the loss of sex influence to the individual, with all the grave disturbance in general metabolism which this loss signifies. The earlier in life that it occurs, the greater is the calamity.

Ovarian transplantation seeks to replace the lost or disabled glands. In animals this procedure has been so successfully carried out that conception has followed it, even in heteroplastic transplantation. In the human, only one such case has been reported, that of Robert T. Morris, of New York; though in homoplastic transplantation Morris and Frank both report cases. The great difficulty in the human female is to be sure, even in a double oöphorectomy, that all ovarian tissue has been removed. In a certain number of cases islets of ovarian parenchyma are scattered throughout the posterior lamina of the broad ligament at varying distances from the main organs, a persistence of the type of diffuse ovary found in birds and reptiles. This accessory ovarian tissue will perform its function, will even ovulate, after removal of the main organs. Cases of pregnancy after double ovariotomy have been recorded by Gordon, Doran, Blair Bell, and others. One such case came under my own observation in a woman of about forty, upon whom such an operation had been performed by Dr. Lockhart of the Montreal General Hospital. In this case, both ovaries and tubes, having become involved in a severe gonorrhœal infection, had been removed sixteen months before. Menstruation did not recur for six months after the operation, and then only slightly, and at irregular intervals. She conceived, nevertheless, and in due time was delivered of a healthy child.

While supernumerary ovaries are extremely rare, I think it must always remain doubtful in any given case whether or not the operator has removed all the accessory ovarian tissue. The cessation of menstruation must not be considered an infallible test of this removal, since while enough ovarian tissue may not be left to furnish sufficient "hormone" to institute a complete menstruation cycle, this tissue may yet ovulate and provide a corpus luteum.

Again, in heteroplastic transplantation the incidence or subsidence of all subjective phenomena must be very carefully accepted. Very rarely can the "graft" be made immediately upon the removal of the diseased organs, a great difficulty is to secure the graft at all; and in the interval the patient's economy has become more or less depleted of ovarian secretion. In consequence, the metabolic balance has been greatly disturbed, and the power of suggestion acquires an exaggerated influence, at least for a time.

In all cases of hetero-transplantation the question of the individual specificity of tissue should, I think, be always borne in mind, as this must, of necessity, affect the degree of cell-lysis and degeneration in the graft. The effect of this specificity has been lately emphasized by Marshall in his experimental work on rats. His heteroplastic grafting always succeeded best in rats from the same litter. In this matter the blood of the two individuals would afford a ready and reliable means of determining this specificity index and such a blood examination should always be made.

The success of any grafting can only be definitely decided by a subsequent microscopical examination of the engrafted tissue. For only in this way can the graft be known to have definite cellular life, and the fallacy of the incomplete removal of the original ovarian tissue, or the known vagaries of the power of suggestion, be definitely excluded.

In homoplastic transplantation, the cases must be few wherein an ovary, in whole or in part, is healthy enough to be removed and engrafted, and is not healthy enough to leave alone. In this connexion it is wise to remember the value of the ovarian ligament, for, as has been pointed out by Dauber, this frequently contains active parenchyma-tissue. It is also generally believed that the ovary possesses considerable capacity for regenerating tissue after its partial removal, and hence an additional reason for leaving the segment *in situ*.

The whole question of ovarian transplantation has been lately reviewed, with the addition of much independent research, in an admirable paper published by Franklin H. Martin of Chicago.

Ovarian medication dates from the time of Brown Séquard and Madam Browne for, though the ancients administered the fresh testicles of the fox, liver of the wolf, and the lungs of the deer, *etc.*, to confer upon the recipient the characteristics of those animals, the ovaries apparently were never used; feminine characteristics were not especially affected by the ancients. It was in 1889 that Brown Séquard made his first communication on testicular extract, but as Adami has said, it was not till the demonstrations of George Murray with extract of the thyroid gland in myxœdema that the internal secretions came into their own. In 1898 Bestion de Camboulas published his monograph, "Le Suc Ovarien," which gives the best account of the subject that has as yet appeared. Included in this work are a large number of animal experiments. These results have never been contravened, and may be summarized as follows: "Troubles of the menopause, natural and artificial, were much ameliorated by ovarian extract. Rapid improvement was always seen in amenorrhœa and chlorosis. Mental troubles which accompany genital lesions are greatly lessened, and in such cases there is always marked improvement in the general condition. It must never be given to pregnant women, as in pregnant animals even small doses may prove toxic."

This is practically the therapeutic view of to-day, though a greater elegancy has been achieved in the preparations themselves. Just as in the procural of the digestive ferments of pepsin and trypsin, the sow is the preferred animal. Cows are too prone to tuberculosis; heifers' ovaries are not sufficiently active, and ewes' ovaries are too small. The preparation of the dry gland with sugar and gum in the form of pills or tabloids is the article with which we are most familiar.

In selected cases this ovarian substance has a definite therapeutic value, though the results in different individuals are by no means uniform. I have seen no ill effects follow its use, and in some instances the results are almost miraculous. A single instance of a case seen three months ago, may be cited. This was that of a young woman of twenty-seven, from whom both ovaries had been, feloniously, removed for dysmenorrhœa two years before. The condition of this woman was pitiable, and the close correlation of the ovaries to the sympathetic system was amply borne out by her appearance. A state of *chronic surgical shock*, with pronounced mental instability, perhaps best describes it. The exhibition of two of Burroughs and Wellcome's 5 gr. tabloids of "Varium" three times daily recreated this woman within a month. In some cases I have found that the addition of arsenic or small doses of the thyroid extract gives more favourable results.

The natural and proper conservation of the ovary, however, consists in leaving it alone. As a profession, I think we cannot too strongly fortify this position, and especially as concerns the woman in her second or third decade.

Malignant disease, of course, remains in a class by itself; as it affects the ovaries, it is very commonly bilateral. With us in the Royal Victoria Hospital, it has been four times more frequently found affecting both ovaries. It is fortunately, however, commonly a lesion of middle or old age, when the sacrifice of the ovarian tissue is not so disastrous.

In the innocent neoplasms, and despite the views of the pathologists, a certain number of these are clinically and virtually innocent, there is usually the opposite ovary to be relied upon. On the rare occasions when both ovaries have been involved in such innocent growths, it has been my practice in the case of young adults, to resect such a neoplasm, and to leave a certain area of its periphery behind, adjusting its secretive surface widely open to the peritoneal cavity. I have yet to see any harmful results follow such a procedure, whereas the larger number of those cases have so escaped a premature menopause.

The various infections, however, constitute the greater number of these cases of ovarian surgery. For, though the ovary is well protected by its capsular membrane from both gonorrhœal and tuberculous infection, it usually finally succumbs. Its position in the lymphatic path renders it on the other hand specially vulnerable to the pyogenic infections of the pelvis. With all such infective conditions, each case must of course be taken by itself; but in my opinion, the experience of the operator is, in most instances, the determining factor. The greater his experience, the more conservative does he become. Save in the few worst cases, sections, or segments, or cortical strips, from one or other ovary, may be safely left behind. For some time it has been my practice to reflect these sections or strips away from the infected area, and while leaving these attached at one extremity, to tack them backward or outwards upon a more healthy peritoneal area, a modified homoplastic transplantation. I mention here again the value of the ovarian ligament, for composed as it largely is of dense, resistant tissue, its parenchyma frequently escapes the infective process.

Fibro-cystic ovaries no longer exist, I believe, as a pathological entity, but only as an exaggerated condition, in certain individuals, of ovulation wear and tear. This condition is entirely within the limits of the normal, and to remove these ovaries is to commit a surgical blunder.

For dysmenorrhœa one should remove the ovaries—never. In any imaginable desperate case, a hysterectomy would be indicated. Only in the rarest instances should the ovary be removed for ovarian pain, for the ovary itself is rarely at fault. Frequently is it a varicocele or a gouty or rheumatic diathesis. Here as elsewhere, in the words of La Rochefoucauld, "Pain is the biggest liar in the world."

W. W. CHIPMAN.

Men and Books

By Sir William Osler

I. Nicolaus Steno. The Danes have good reason to be proud of the series of distinguished men who have graced the profession of that country in the past three hundred years. No one should have a warmer place in our memory than the anatomatist, geologist, and theologian, whose name is on our lips daily in connexion with the duct of the parotid gland. There has recently been published in Copenhagen at the expense of the Carlsbergfond (an institution corresponding to one of the Carnegie Foundations), and edited by Vilhelm Maar, "Nicolai Stenonsis Opera Philosophica," in two sumptuous volumes. The edition is limited, but it should be in the hands of all important medical libraries. It may be obtained from Vilhelm Tryde, Copenhagen, and the price is 50 krona.

An excellent introduction, in English, gives an account of Steno's life and work. After studying with the famous Bartholins, father and son, he went to Amsterdam, where in his twenty-second year he made the discovery with which his name is associated. Then he studied with the famous Sylvius, of Leyden, and after a disappointing visit to his native city, where he had hoped to obtain a professorship, he went to Paris and then to Florence. In addition to anatomical studies, he seems to have everywhere taken a great interest in the religious conditions, and in Florence he was gradually won over to Catholicism. By this time he had done a great deal of good anatomical work on the lymphatic vessels, the brain, the heart, and the muscles, and also in comparative anatomy, and the papers are reproduced in these volumes.

The very day he renounced his Protestant faith Steno was summoned to the University of Copenhagen by the Danish king, but he did not take up his work there as Anatomicus Regius until 1672, and he found the conditions so unfavourable that he resigned after two years.

The scientific work of Steno is more appreciated to-day in geology than in anatomy. During his prolonged visits in Florence he became interested in the geological conditions of Tuscany, and his studies in palæontology were among the first to determine the exact nature of fossils. He also made important generalizations on stratification. A few years ago the International Society of Geologists erected a tablet to his memory in the court of the Laurentian library at Florence.

From brilliant studies in science Steno was early diverted to religious problems, and in 1675 he took orders in the Roman Catholic church and devoted the rest of his life to the service of God and the church. With a singular charm of manner and great personal piety he was soon surrounded in Florence by hosts of friends, and so much was he appreciated that in 1677 he was appointed Bishop of Titiopolis "in partibus infidelium," and Vicar Apostolic of Northern Germany and Scandanavia. For a time he lived in Hanover, then in Münster, and lastly in Hamburg. He sold all his property and lived the life of an ascetic, and made long, troublesome journeys. At Hamburg the austerity of his life became so extreme that he did nothing to live up to his rank, did not even wear his clerical suit, and spent everything on the poor. So ardently did he work for the church that he made himself hated even by the Catholics, who threatened to cut off his ears and drive him from the town as a criminal. In 1685 he left Hamburg for Schwerin, "where he worked under circumstances which were, if possible, still more distressing, and here he died in unspeakable misery, forty-eight years old." The Grand Duke of Tuscany had his body removed to Florence, where it rests in the crypt of St. Lorenzo. A strange figure, one of the strangest in our history, well worthy of the affectionate tribute which his countrymen have paid in these two splendid volumes.

II. Les Collections Artistiques de la Faculte de Medecine de Paris. There may be faculties with finer buildings, there are some with better laboratories, but there is none of any country with such a history, or with such treasures, artistic and literary, as the medical faculty of Paris. And this is as it should be, since in time it out-dates all but Oxford and Bologna, and in long centuries of importance it out-classes all others. The most cherished possession of its magnificent library, second only to that of the Surgeon-General's in Washington, are the twenty-five manuscript volumes of *Commentaries* from 1395 to 1786—incomparable annals, as Corlieu says, written by the hands of the one hundred and ninety-four deans who successfully became head of the school, and who related in these volumes the important acts of their administrations. And there were earlier records, but Dr. Hahn, the learned librarian of the faculty, told me he did not think there was medical instruction before 1200, and that the date of the first doctorate was 1270.

But the object of this note is to call attention to a sumptuous work in large quarto issued by Masson et Cie (100 francs), and edited by Noé Legrand, Dr. Hahn's able coadjutor in the library, and published under the care of the present dean, Professor Landouzy.

After a description of the buildings and pictures of the present faculty, and their gradual evolution, there follows a set of beautiful reproductions of the portraits in the possession of the faculty, many of great artistic, and all of historical, importance. There are fine early pictures of Guy De Chauliac, Pitard, the great thirteenth century surgeon, and many of the men who in the fifteenth and sixteenth centures made Paris famous, Fernel, Piètre, and Riolan. One above all others is interesting to the historical student, Gui Patin (1601-1672), author of the famous letters which give such a life-like picture of the medical profession in France in the seventeenth century. Legrand quotes a happy description of him by Vigneul-Marville: "Il était satirique depuis la tête jusqu'aux pieds. Son chapeau, son collet, son manteau, son pourpoint, ses chausses, ses bottines, tout cela faisait nargue à la mode et le préces à la vanité. Il avait dans le visage l'air de Ciceron, et dans l'esprit le caractère de Rabelais. Sa grands mémoire lui fournissait toujours de quoi parler, et il parlait beaucoup. Il était hardi, témeraire, inconsidere, mais simple et naïf dans ses expressions. Il s'exprimait en latin d'une manière si recherchée et si extraordinaire que tout Paris accourait à ses theses comme à une comédie."

Then follows a group of about fifty portraits of the celebrated members of the College and Academy of Surgery; afterwards the portraits of the modern men who have made the school since the fusion of the College of Surgery with the old faculty. There are splendid pictures of Laenec, of Nélaton, and of Trousseau. The faculty is very rich in sculptures, of which there are reproductions of more than one hundred.

Among the most treasured possessions of the medical school are the famous Gobelin tapestries, executed in 1634. They are in a splendid state of preservation, and are beautifully reproduced in this volume. Then follows a description of the various designs, engravings, medals, and the different works of art in the possession of the faculty. It is a magnificent volume, full of historical interest, and exposes for the first time to full light the wonderful treasures of the Paris school.

III. SAMUEL WILKS. When a student in Montreal, during the summer of 1871, I had an opportunity to make a good many post mortems at the General Hospital, and with the material so collected, I wrote my graduation thesis. It was my habit to pester Dr. Palmer Howard for information and literature, and one day he handed to me Wilks's "Lectures on Morbid Anatomy," and from that time everything was plain sailing, as all the ordinary appearances met with were described fully. This was my first introduction to the well-known Guy's Hospital physician. When a student in London, Mr. Arthur Durham, one of the surgeons at Guy's, whom I knew quite well, took me to Dr. Wilks's wards one day, and I have very pleasant recollections of a delightful visit. In 1875 I sent him a copy of a study which I had made of a remarkable case of a miner's lung, which I had obtained from the body of a Nova Scotian miner who had died under my care in the small-pox department of the General Hospital, and to this day I can recall the great pleasure I felt at the kindly letter I received in acknowledgment, the first of a great many which he wrote to me, always in the same sympathetic way. I did not meet him socially until 1878, when I was in London with Dr. George Ross. I sent our cards in one day as he was "making the rounds" at Guy's. I was surprised that he left the bedside group with such rapidity after receiving our cards, but he rushed up to us and with some embarrassment, and with his eyes twitching, asked "For Heaven's sake, do either of you speak French?" He was struggling with an exceedingly inquisitive professor from Bordeaux, and fortunately Dr. Ross was able to act as intermediary. We spent a delightful evening at his house, and thereafter it was my habit, on visits to London, always to call upon him.

Few men in the profession had a longer or better innings. With his death snaps the last link between the old medicine and the new, the link which united the profession with the famous clinicians of the early part of the last century, Bright, Addison, and Hodgkin. Wilks may be said to have stood sponsor to both Addison and Hodgkin, and his best work was probably in helping to clearly define the diseases described by them. He illustrated the advantages and disadvantages of approaching clinical medicine through the dead house. Knowing disease thoroughly, he became a great diagnostician, but his training fostered the therapeutic nihilism into which he, Gull, and many of his contemporaries were driven, and for which, when we think of the vagaries of those days, we have to be greatly thankful. He was a frank, outspoken man, whose yea was yea, and nay, nay, to students and patients alike.

Wilks's life may be read in his recently issued "Biographical Reminiscences," which give a charming picture of his early years, and of the Guy's Hospital School, of which he was in our generation the chief ornament. While not a great autobiography, like that of Kussmaul, it has the merit of a well-told story, without needless padding, and rich in details of a period memorable in our history. He had a remarkably attractive personality, which age so adorned, that at three score and ten there was no handsomer man in London. A good head, well-moulded features, merry blue eyes, and abundant white hair made up an ideal picture. And he had all the things that should accompany old age, fairly good health to the end, an unceasing interest in life, and the affectionate esteem of a large circle of friends. The last time I saw him in public was at Guy's Hospital, about five years ago, when I gave an address on Sir Thomas Browne. He was then over eighty, and had recently recovered from an appendicitis operation. It was delightful to see the just pride which the Guy's students took in the dear old man, to whom they listened with eager attention. Blest with the saving salt of humour, he reminded one sometimes of the Autocrat of the Breakfast Table, to whose works he was devoted. In their outlook on life they had much in common, as Holmes himself remarked in a charming letter which is given in Morse's life. Wilks had a delicious honesty which sometimes bordered on the indiscreet, and which did not always make his advice as a consultant acceptable. And on the occasions at which it was his duty to read biographical notices, the "verum" rather than the "bonum" was emphasized. But these traits only added to the charm of a great physician and an honest man.

Retrospect of Medicine

THE SPECIFICITY, DANGER, AND ACCURACY OF THE TUBERCULIN TESTS. L. BROWN. *The American Journal of the Medical Sciences*, VOL. CXLII, October, 1911, p. 469.

BROWN believes firmly in the specificity of tuberculin for tuberculosis infection, and, if leprosy be excluded, all published reports which go to show that other diseases, particularly syphilis, react specifically to tuberculin, may be received with doubt. The dangers following the use of the various tests are slight, and if proper dilutions of tuberculin be used and appropriate cases selected, little or no harm will result. Although the subcutaneous test still remains the most reliable of all the tuberculin tests, it has not become popular on account of the *general reaction* required. That tubercle bacilli have been found after giving this test, simply indicates that the sputum has not previously been examined carefully enough. In two hundred and eighty-six cases at the Adirondack Cottage Sanatorium that were given the subcutaneous test, only 6 per cent. showed tubercle bacilli afterwards, and in less than 2 per cent. did the bacilli occur within two months, so that little importance can be attached to the tuberculin test as the cause of the occurrence of tubercle bacilli in the sputum. Failure to react to 10 milligrams of old tuberculin does not exclude clinical tuberculosis. In practice, exposure to infection, hemoptysis, pleurisy with effusion, localized persistent râle at an apex, are of more importance than the reactions derived from any of the tuberculin tests.

THE INVESTIGATION OF THE SPUTUM SUSPECTED OF CONTAINING TUBERCLE BACILLI. M. NEMMSER AND E. MARTIN-LISSOWSKA. *Deut. Med. Woch.*, September 14th, 1911, pp. 1697-1698.

THE authors have made a comparative study of the different concentration methods described by various writers, and believe that the acid trypsin digestion method is superior to them all. To 5 c.c. of sputum is added an equal quantity of 0·4 per cent. Hcl. The mixture is then shaken well and to this is added about 0·1 c.cm. of trypsin or pancreatin. It is now placed in the incubator at 37°C., shaken from time to time, and allowed to remain there from three to five hours. Smears are made from the sediment.

RALES IN THE LUNG APICES. Külbs. *Zeitschrift fur Klinische Medizin*, Bd. 73, Heft 34, 1911, p. 12.

KULBS reports on a series of cases between the age of twenty and thirty-five years that had come to his notice in the first medical clinic, Berlin. These patients complained of pains in the breast and back; loss of weight and strength; cough and expectoration. On examination the physical signs were generally limited to the right apex —seldom in the left. The breathing in the affected area was rough, vesicular, with expiration prolonged and râles present on quiet breathing. Cough did not increase these sounds, and they remained very constant often for weeks at a time. The sputum contained no tubercle bacilli. Five of the reported cases had been given the tuberculin test, and the result was negative. Külbs points out that many cases that have been diagnosed as having tuberculosis from the presence of râles at the apices are really not so, and are simply suffering from a localized catarrh which has extended from the pharynx and larynx. He speaks of Möller, Krönig and Köhler as having had similar experiences to his own.

CONTRIBUTION TO THE TUBERCULOSIS DIAGNOSIS IN CHILDHOOD. (THE INTRACUTANEOUS REACTION.) D. ENGEL. *Deut. Med. Woch.* Berlin, September 7th, 1911, Vol. XXXVI, pp. 1637-1641.

ENGEL urges the use of the intracutaneous test, both in the clinic and in general practice. He believes it to be the most trustworthy of all the tuberculin tests. The reaction is relatively light and causes no discomfort to the patient. The method permits of the dose being accurately measured, and where the other tests have their limitations, the intracutaneous test will be found to be suitable and sure in its results.

Engel uses 1 drop of a 1 to 1,000 solution of old tuberculin, which will be found to produce a reaction in the majority of cases. If no reaction occur then the strength of the solution is increased to 1 per cent., 10 per cent., and, if necessary, to 100 per cent. for some cases. If no reaction occur to the stronger concentrations, he is of opinion that tuberculosis can certainly be excluded.

THE LEUKOCYTIC PICTURE IN PULMONARY TUBERCULOSIS. SOLIS-COHEN AND STRICKLER. *The American Journal of the American Sciences.* No. 476, November, 1911, pp. 691-698.

THE writers have endeavoured to find out if there is any relation between the different types of leucocytes and the extent and progress of the disease. From fifty patients, at the Philadelphia Jewish Sanatorium, one hundred and eighty-two blood counts were taken. The patients were grouped in three stages, incipient, moderately advanced, and far advanced, and the following conclusions were made: (1) Improvement in pulmonary tuberculosis is associated with an increase in the proportion of lymphocytes in the blood at the expense of the polymorphoneuclear cells. As the patient grows worse the proportion of polynuclears increase. (2) Increase in the proportion of polynuclear cells containing one and two nuclei (Arneth) occurs when the patient is doing well. (3) Mononuclears, transitionals, and eosinophiles are unaffected by the stage, extent or progress of the disease. (4) The leukocytic picture often determines the resistive power of the tuberculous patient.

"CONSUMPTION AND ORDER OF BIRTH." RIVERS. *The Lancet*, October 7th, 1911, pp. 899-1004.

RIVERS, when holding a resident position at Crossley Sanatorium, in 1906, observed in the patients' case sheets a large number of entries of eldest born children and from these conceived the idea that clinical pulmonary tuberculosis might affect such persons more than others. The data were forwarded to Professor Karl Pearson who has since shown that the incidence of tuberculosis is greater among the first and second born than among the younger members of the family. The writer refers to the records of Brehmer and Riffel, who both believed that the eldest born escaped tuberculosis while the later born were likely to be consumptive. From Pearson's mathematical study it appears to be the reverse, i.e., a special incidence of consumption on first born, to a less degree on second born, children. In Rivers' own cases (Table 11, 263, Table 12, 353) there is still considerable eldest born excess and some second born excess. It is also seen that primiparous children of consumptive parents more frequently contract tuberculosis than like children of non-consumptive parents. This is explained by the more frequent exposure of the infected.

Retrospect of Surgery

NOTES UPON THE THIRD TRIENNIAL MEETING OF THE INTERNATIONAL ASSOCIATION OF SURGEONS, HELD IN BRUSSELS, SEPTEMBER, 1911. Reported in the *Centralbl. f. Chir.*, No. 43, 1911.

AT this very important congress of surgeons there were set down for discussion three main subjects: the treatment of fractures, acute and chronic pancreatitis, and the surgery of the pleura and lungs, one day being set apart for each subject.

To Michel, of Nancy, was assigned the duty of presenting the subject of pancreatitis, in particular its diagnosis and treatment. First, he gave a classification of the affection as understood under the collective title of pancreatitis, a classification which is now customary and generally recognized. Under acute pancreatitis he included the hæmorrhagic, the suppurative, and the gangrenous forms; under chronic pancreatitis, the sclerosis, and the lipomatosis of the gland, and also pancreatitic lithiasis. All these forms of pancreatitis, he claimed, should be acknowledged as surgical. Even the catarrhal inflammations of the pancreas, before they become chronic and incurable, may be cured by surgical means.

With pancreatitis, early diagnosis and early interference are necessary; it is impossible to wait for confirmation of the diagnosis in the laboratory. Often, of course, diagnosis is very difficult, as all acute affections of the upper abdomen have symptoms almost identical with those of acute pancreatitis. M. quotes the *mot* of Koerte's, that in abdominal surgery one must always remember the fact that, hidden deep behind the stomach, there is a gland which is more often affected than has been thought. In diagnosis one must be guided (1) by the physical signs; (2) by the peculiarly severe nature of the pain, as well as its situation; (3) by certain functional disturbances, especially steatorrhœa, rapid emaciation, and glycosuria. The acute hæmorrhagic or suppurative pancreatites run a course either under the type of an intestinal obstruction or under that of a perforative peritonitis. He laid stress upon the value of a very exact case-history which often revealed the diagnosis through this or that particular symptom. It was difficult to distinguish the different acute or peracute forms from each other, as their clinical symptoms were alike. Just as difficult was it to diagnose the chronic forms which complicate cholelithiasis. Very important, of course, was the examination of the functional disturbance of pancreatic secretion. Chemical examination of the stomach and the duodenal contents of the fæces, and of the urine, by the methods of Sahli, Wohlgemuth, and Cammidge, is necessary. After all, however, there exists no absolutely reliable method of examination of the pancreatic secretion; so that diagnosis will almost always be one of probability, per exclusionem, which will have to be confirmed by operation.

Koerte, of Berlin, led the discussion as follows: The various forms of pancreatitis—the hæmorrhagic, suppurative, and necrotic,—run so much into each other that at the outset they are impossible of separation. Fatty necrosis is never the cause, but the effect, of pancreatitis. In many cases one can make a probable diagnosis, but seldom with certainty, as there are no pathognomonic signs.

Clinically, the peritoneal signs are at the onset the most pregnant; later the bowel paralysis dominates the picture. The pains at the beginning of the affection are colicky, as in gall-stone attacks. Glycosuria, in his experience, is seldom found; when present, it indicates almost total destruction of the pancreas.

With regard to treatment, Koerte pointed out that the recent tendency to operate on all cases of peritonitis brings as a consequence more frequent early interference in acute pancreatitis. We have discovered that early operation is the only treatment that gives good results. Once necrosis and gangrene have set in, the prognosis becomes poor. Early operation is necessary, especially to prevent necrosis if possible. Necrosis has been found present as early as the third day. Operation consists in an epigastric incision, the evacuation of serous-hæmorrhagic exudate, and saline irrigation. The pancreas must be exposed in every case; the best route is through the ligamentum gastro-colicum. The serosa is to be torn through and one must penetrate bluntly with forceps into the gland, in order to relieve tension and give drainage to the secretion. Only in this way can necrosis be prevented or limited. Only in collapse cases may one rest content with opening or drainage of the peritoneum. Rapidity of operation is a necessity, because of the frequency of collapse. Much search through and pulling of the bowel is to be avoided. Koerte does not recommend the loin incision, except for collections pointing there. Secondary hæmorrhage from eroded vessels may be a great danger. Fistulæ of the pancreas usually heal spontaneously with time. Koerte collected one hundred and eighteen cases of acute pancreatitis in the literature with 38 per cent. mortality. His own number was fifty-two cases; eight of these got well without operation; five were diagnosed only at autopsy, as they were moribund and inoperable. Thirty-eight were operated upon, with 47 per cent. mortality. Among those operated upon during the first week, the mortality was only 20 per cent.; in the second and third weeks, 35 per cent.; later, 100 per cent.

Giordano (Venice) discussed in particular the chronic form, and advocated surgical treatment for chronic cases, directly by pancreastomy, indirectly by drainage of the gall passages.

Delagénière, of Mans, declared that with few exceptions the acute form was the last stage of the chronic disease. We must attack the disease in its chronic stage, in which operation is often successful.

R. dos Santos (Madrid) emphasized the value of costo-lumbar pain and muscular rigidity in the diagnosis.

SECOND DAY. Pleuro-pulmonary Surgery. This subject was presented by Carré, of Bonn. One can give only a few notes of his address. The avoidance of operative pneumothorax with its dangers was the first essential in lung surgery. The greatest danger lay, not in the complete exclusion of one lung, but rather in the flapping of the mediastinum with consequent reduction in the gaseous exchange in the other lung. The danger is overcome by fixation of the mediastinum, or by pulling forward a lobe into the wound. The breathing and heart action improve; and the danger, at least for the moment, disappears. Pleural adhesions lessen the danger of open pneumothorax. The method of differential pressure here comes in as the one easy way to avoid these dangers. He believed that positive pressure was further from the physiological normal than negative pressure. With the former, pressure on vessels became too great, and the right heart was apt to become over-dilated, so that, with a weak heart and long application of the pressure, there was considerable danger. He thought the apparatus of Meltzer and Auer as carrying out the principle of intratracheal insufflation was the simplest and safest yet devised for use in pulmonary surgery.

News

Castor, Alberta, has a new hospital. It cost $25,000, and is under the charge of the Sisters of Mercy.

The Nova Scotia Hospital for Insane has in course of erection a new building for acute cases, which has been designed according to present-day ideas. It will accommodate seventy patients, and will cost about $80,000.

The L. P. Fisher Memorial Hospital, at Woodstock, was opened in November. The hospital is situated in the upper end of the town, and was the residence of the late L. P. Fisher. It is a handsome building surrounded by ten acres of land.

During the week of the Ontario Medical Association annual meeting it is proposed to hold a large reunion of graduates of Trinity Medical School. A formal banquet will probably be held on Tuesday, May 21st. Dr. Samuel Johnson, 169 Carlton Street, Toronto, is secretary of the committee of arrangements.

At the ninth conference of the International Red Cross Society to be held in Washington next May, there will be an important exhibit of appliances for alleviating the sufferings of sick and wounded soldiers. Prizes amounting to nine thousand dollars will be awarded in the Empress Marie Feodorovna competition, and these may be competed for by Canadians. The Canadian Red Cross Society, of which Dr. C. R. Dickson, of Toronto, is secretary, is taking an active interest in the competition and in the conference.

The trustees of the National Sanitarium Association have announced to the medical profession in Canada that they have appointed Dr. W. P. Caven, Dr. J. T. Fotheringham, Dr. H. B. Anderson, and Dr. Harold Parsons as consultants to the Muskoka Cottage Sanitarium and the Muskoka Free Hospital. These well-known physicians will spend a day regularly once a month at the Muskoka Homes. The visits of Dr. Parsons, who has charge of the tuberculosis clinic at the Toronto General Hospital, will be every two months.

ONTARIO MEDICAL ASSOCIATION

The annual meeting of the Ontario Medical Association will be held on May 21st, 22nd, and 23rd, 1912, and the committees are already at work. Dr. Herbert Bruce is president, and Dr. J. T. Fotheringham is chairman of the committee of arrangements.

ST. JOHN'S AMBULANCE ASSOCIATION

The annual meeting of St. John's Ambulance Association in Ontario was held in the Normal School, Toronto, on November 28th. The meeting was graced by the presence of H.R.H. the Duke of Connaught, President of the Hospital Association and Grand Prior of the Order of St. John of Jerusalem. His Royal Highness in an address to the association spoke of the great value which their work attained in such a sparsely settled country as Canada. He felt that a first-class aid certificate should be a requisite in every home.

Dr. C. J. Copp, the honorary secretary-treasurer, read his annual report, which showed that the work in the province is expanding rapidly. During the last year five hundred and forty-seven certificates in first-aid have been issued; sixty in home nursing; fourteen in home hygiene; eleven in sanitation; and one hundred and four in junior first-aid. Fourteen medallions and ten labels have been presented; fifty-two classes have been held. The work of the association is being carried on earnestly in many cities. These now include Toronto, Hamilton, London, Ottawa, Stratford, Brantford, Galt, Belleville, Paris, and Owen Sound.

Election to the Ontario Council for the ensuing year resulted as follows: patron, His Honour the Lieutenant-Governor; president, Col. James Mason; vice-presidents, Col. W. N. Gartshore, London, and Wallace Nesbitt; chairman of the executive, Col. J. F. Fotheringham; honorary secretary-treasurer, Dr. C. J. Copp.

Obituary

Dr. J. W. Alway, of Grimsby, died November 15th, in his seventy-sixth year. He was born in Oxford County, and was educated at Victoria College, Toronto.

Dr. J. A. Aumont died in Montreal, December 3rd, from pneumonia. He was born in Oswego, forty-one years ago, and settled in Montreal about eight years ago.

Dr. F. A. Cox, of Upper Stewiacke, died November 26th. He was the eldest son of Dr. Cox, of Upper Stewiacke, and was assistant to his father at the time of his death. Dr. Cox was a graduate of Dalhousie University and the Halifax Medical College.

Canadian Literature

Original Communications

December, 1911

Canadian Practitioner and Review:

A Case of Acromegaly	Graham Chambers.
Surgical Treatment of Infantile Paralysis	John R. Parry.
A Case of Spindle-cell Sarcoma of the Larynx	J. Price-Brown.

Canada Lancet:

Heterophoria and Headaches	G. S. Ryerson.
Notes on a Trip Abroad	D. Gibb Wishart.

Canadian Journal of Medicine and Surgery:

Biological Aspect of Tuberculosis	A. H. Caulfield.
Post-Partum Hæmorrhage	R. Ferguson.
Causes of Increased Heart Rate in Fever	H. K. Moorhouse.
Address given by the Chairman of the Surgical Section of the Academy of Medicine	A. H. Bruce.

Dominion Medical Monthly:

The Rôle Played in the Genito-Urinary System by the Colon Bacillus	G. S. Peterkin.
A Law of Sensitiveness	G. W. Howland.
A Few Considerations	J. S. Sprague.

Le Montréal Médical:

La tuberculose et ses différents modes de contagion	M. le professeur Debove.
Le traitement du diabète gras	M. le professeur Robin.
De la persistance des râles sous-crépitants pulmonaires	M. le professeur Bernheim.

The Public Health Journal:

Toronto Water Supply: Prevention of Waste	W. Oldright.
Le médecin et l'hygiène	E. P. Lachapelle.
Modern Features in Connection with Sewage Disposal	J. A. Murray.
Foods and Their Relation to Public Health	P. B. Tustin.
The New Public Health Act and the Effects on Provincial Municipalities	E. M. Wood.

Western Canada Medical Journal:

Nastin Treatment of Leprosy	Fernand L. de Verteuil.
The Need of Care for Crippled Children	Douglas C. McMurtrie.
A Long Vacation	Albert Paling.
Mental Training in Childhood	Robert Jones.
The Value of Elimination in the Treatment of Disease	A. B. Conklin.

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE sixth regular meeting was held December 15th, 1911.

PROGRAMME

LIVING CASES: Dislocation of Semi-lunar Bone; Reduction. H. S. Shaw, E. W. Archibald, A. H. Pirie.

PATHOLOGICAL SPECIMENS: Series by O. C. Gruner.

PAPER: The Present Position of Radiotherapy in Medicine. Illustrated by Lantern Slides. A. Howard Pirie.

CASE REPORT WITH SPECIMEN: 1. Intussusception. 2. Carcinoma of the Cæcum. K. Cameron and L. J. Rhea.

Case Report: Pulsating Exophthalmos; Ligature of the Common Carotid. G. H. Mathewson and J. M. Elder.

Synopsis of the Paper: Action of x-rays on normal and diseased tissues. Action on growing cells, roots of hairs, sweat glands; x-rays as a stimulant, vesicant, and destructant. The class of disease likely to be influenced by x-rays. Diseases treated with success during the last ten years with x-rays. Measurement of dose of x-rays. Importance of measuring the dose exactly. Suitable dose for different diseases. Lantern slides before and after treatment by x-rays of patients with ringworm, rodent ulcer, lymphadenoma, tuberculous glands, keloid, epithelioma. Cure of excessive perspiration by permanent destruction of the sweat glands. Effect in splenic leucæmia, psoriasis, gouty eczema. The value of x-rays in recurrent carcinoma after removal of breast, and in myoma uteri. Removal of superfluous hairs, nævus.

TORONTO ACADEMY OF MEDICINE

Meeting of November 6th, 1911

Cases Shown: (1) Dr. McLennan: Child four years old. A white reflex discovered by his parents in the left pupil. The lower part of the posterior segment shows a whitish tumour, all red reflex lost; the upper part more like an exudate, with a slight reflex seen. Some flocculent material in the vitreous. For diagnosis.

Discussion: Dr. Reeve could not see any blood-vessels on the tumour, and thought the upper area looked like exudate. Did not think it gliomatous, and would suggest tuberculin test. Dr. Ryerson thought it looked like a solid growth; not like a glioma, but by exclusion it might be a sarcoma. Dr. McFarlane had a similar case, which he was watching. His case was bi-lateral, double white reflex and a few small vessels. His diagnosis was tentative.

(2) Dr. Reeve: Coloboma of the iris and choroid, lens not involved. Fortunately the apex of the coloboma did not reach within a disc-breadth on the nerve-head, and the patient had never noticed the defect in his field. The other eye had degenerated, and had been removed.

(3) Dr. Price-Brown: Showed the case of congenital cyst under or in the tongue, reported last month. Abscess has been opened and found to extend back under the tongue two and one-

half inches. The sac cauterized with electric cautery and swabbed with carbolic acid, and packed. There was no connexion with Wharton's duct. On first removal of packing a large sac had followed leaving a clean surface.

Discussion: Dr. Wishart—It was unfortunate that a specimen of the sac wall had not been examined. He thought it probable that it was a slough which had come away.

(4) Dr. Davies: Girl fifteen years old; five years ago her tonsils had been excised, before which her voice had been lost. Since then she spoke in the hoarse voice she now has. No abnormality can be found to account for it.

(5) Dr. Goldsmith: Conservative mastoid operation with early post-aural closure; bismuth-paste dressing. Miss M., aged twenty-five. Deafness bilateral since childhood. Right ear dry, formerly had discharge for years; this ear has no useful hearing; left ear has had periodical discharge since childhood. For the past few years ear is said to have been dry. Six or eight months ago discharge appeared again and has continued ever since. Patient was first seen October 4th, 1911. There was some vertigo at times, nystagmus only to the right. Pain on the left side of the head, and mastoid antrum, no swelling over the mastoid. The canal was filled with granulation and pus. This being the only useful ear, I hesitated to do a radical operation, preferring to thoroughly clear the mastoid and antrum, and then shut the antrum and tympanum from one another by iodoform paste. The mastoid was found diseased at the tip and along the posterior meatal wall to the antrum, which was full of granulation tissue. The after dressing consisted of a narrow rubber band placed in the lower angle of the wound. One week later the mastoid cavity was filled with bismuth paste, and the lower opening closed. Immediate union took place. The aural discharge has practically stopped and hearing is greatly improved.

(6) Dr. Goldsmith: Mastoiditis without post-aural packing—modified blood-clot. This case is of no special interest except that it shows that one may thoroughly clean out a suppurating mastoid and have healing in two weeks without the necessity of post-aural dressing. In this case the wound was allowed to fill up with blood, and a small rubber band was inserted as a drain for the serum. This drain was removed in twenty-four hours, and no further packing used. Ear is dry and hearing normal.

Discussion: Dr. Wishart congratulated the operator on the outcome; this was one of the successful cases where the blood-clot "takes." Dr. Boyd was of the opinion that generally the packing is kept up too long after the Schwartz operation; he had better results since he lessened the time of packing, results which compared favourably with the result of the blood-clot method. He was not very favourable to the latter method.

(7) Tuberculosis of the Larynx: Patient, a commerical traveller aged twenty-nine. Hoarseness two months' duration, gradual onset following cold and influenza. No tubercular family history; eighteen months ago was a patient in a tuberculosis sanitarium, from which he left as "cured." Now there is a thickened layer of granulation tissue over the left vocal cord, the centre of which appears eaten out by a shallow ulceration allowing the cord to show through. His chest shows no active disease at present.

Discussion: Dr. Price-Brown asked what treatment was proposed. He had showed a case two years ago which was treated by multiple punctures with the actual cautery, and the patient was quite well to-day, and working. Dr. Wishart would like to see the actual cautery left out in this case. Dr. McDonagh approved of the actual cautery; the rest treatment if tried must be absolute, and it is so hard to get the patient to preserve absolute silence for a long time, especially if tried at home. Dr. McFarlane had seen a case of St. Clair Thompson's, where the rest cure had yielded splendid results. Also he had never seen any bad effects from the cautery in the larynx. Replying, Dr. Goldsmith said that he would not use bismuth paste in acute cases. He did not uphold the blood-clot method without a drain into the serum for the first twenty-four hours. In the treatment of laryngeal tuberculosis he used both the actual cautery and the rest method. He called attention to the fact that the object of the cautery was to set up a fibrosis, and thought it best where there was a good deal of granulation tissue.

(8) Dr. Goldsmith: Case of papilloma of the larynx in a boy eight years of age. Patient gives a history of hoarseness of many months' duration Family and personal history unimportant. The right cord was covered with a large papilloma, which he endeavoured to remove by the direct method. A good deal of difficulty was experienced, but he was able to remove the largest part quite easily with an endolaryngeal forceps. A very small nodule still exists on the anterior part of the other cord.

(9) Dr. Wishart: Middle ear disease with complications. S.Z., aged fifteen, appeared at the clinic in December last, complaining of persistent general headache, chiefly located in the vertex and occipital regions, which had at first been localized in the left side, and a partial facial paralysis. She was conscious, but drowsy and irritable, with some photophobia, and rigidity of the neck. The temperature varied from 97·3 to 103°. Kernig's sign was present and more marked on the left, knee jerks exaggerated. Fundi normal. On attempting to syringe ear patient became dizzy and fell to floor, so that no observations could be made. The history of the left ear trouble could not be elicited, except that there had been discharge off and on for a long period. Hearing apparently absent. Immediate operation was undertaken, the mastoid was very dense, and the attic was filled with cholesteatomatous material, but no trace of ossicles. The facial ridge was taken away almost flush with the floor, and the sinus and dura exposed. No fistula was found. The temperature fell and continued down for about ten days, when it rose suddenly to 101°. Meanwhile, the headache, which had also lessened, became continuously worse, until the patient suffered intensely. Nystagmus was marked chiefly to left. The wound was reopened, the lateral sinus thoroughly explored, and the posterior and middle fossæ exposed and probed, but beyond the escape of cerebro spinal fluid nothing was found. Gauze drains were placed in the openings and also in the foramen ovale, and the wound left entirely open. The course taken by the case from this on was such as to make the prognosis extremely gloomy, but no light was thrown upon the cause until the end of the seventh week, when meningococcus was found in the spinal fluid, which had been several times examined previously Flexner's serum, 15 c.c. was administered, with an immediate fall of temperature and steady convalescence thereafter, with discharge from hospital at the end of the third month. The facial paralysis has practically disappeared and the girl is quite well.

(10) Dr. Wishart: Slides from a case of carcinoma of the upper part of the œsophagus and pharynx, ulcerating into larynx. H. S., aged eighty-three, with symptoms of four months' duration, presented, on examination, a large mass in the right neck the size of an apple. Internally the right posterior faucial pillar was thrust forward into the pharnyx towards the middle line, becoming more marked inferiorly, where the swelling folded the epiglottis upon itself. The right half of the larynx was pushed to the middle line, and only the

left cord was visible and that indistinctly. The part above the epiglottis was fungating, but no bleeding point was visible, and the parts generally were anæmic. The fungating part was removed with a snare for examination, and proved carcinomatous. This removal gave relief to the swallowing, but the patient died shortly from pneumonia.

Professor Mackenzie's report is as follows: "Glands behind larynx and trachea are markedly enlarged, and tissue at back of larynx and around œsophagus thickened. Tongue somewhat swollen and œdematous. On right of pharynx extending down into œsophagus is a large ulceration area which measures 4 cm. in length by 2½ cm. in width, by 2 cm. in depth. On the side of the larynx this extends up to right aryteno-epiglottidean folds and extends through towards base of epiglottis, giving rise to a couple of small ulcers, the edges of which are of a dirty green colour. The right cord is markedly deformed lying beneath the swelling, left swollen and œdematous. No ulceration. Rest of larynx normal.

(11) Dr. Wishart: Large nasal polyp extending into nasopharynx. Patient, a lad of about fifteen years, presented himself on account of nasal stenosis of the left side. What appeared to be a simple mucous polyp presented itself on the anterior floor of the left fossa, rising further back into the middle meatus. Posterior a large, bluish white tumour lay on the soft palate, almost to its free margin, shutting off a view of all but the extreme right of the posterior nares. It moved freely with the lifting of the palate, and to palpation, and appeared soft. The report of the *x*-ray plate was not available. The growth appeared to be single, and attached within the nasal cavity. There had been no bleeding. There was no history of syphilis. The growth was probably not fibrous, but might be cystic, or myxomatous.

Discussion: Dr. Boyd agreed that it was a mucous polyp, could not consider it malignant. Thought it had its origin in the nose. Dr. Goldsmith thought it a polyp and that it got its peculiar appearance from its contact with air. Dr. Price-Brown would call it more than a polyp. He would put it among the nasal fibromata. Dr. McDonagh saw no reason why it should not be the ordinary form of mucous polyp, but he often sees myxo-fibromata growing from the tissue of the roof of the nasal cavity near the choanæ. Such are easily removed with a snare. If of the fibrous type they more often arise from the pharyngeal vault, and the bleeding at the time of removal is profuse. He has not seen growths from the antrum project into the pharynx. Dr. Wishart in reply did not consider it a fibroma; and mentioned that a specific taint should not be forgotten in these cases.

TORONTO ACADEMY OF MEDICINE

At the open meeting of Toronto Academy of Medicine, held on December 5th, an opportunity was given to many Fellows to express publicly their sorrow at the tragic death of Dr. J. F. W. Ross. Four members, who had been closely associated with him, acted as spokesmen, and the close attention with which an unusually large meeting listened was an eloquent tribute to the sense of deep loss felt by the profession in general.

Dr. Temple delivered a short address on "Dr. Ross as a Surgeon." He traced, in detail, his career from the time of his graduation thirty-three years ago. Dr. Temple had been associated with him since the time of his appointment to the gynæcological staff of Toronto General Hospital, and could speak advisedly of his surgical character. His investigation of cases was painstaking; his diagnosis most accurate. As an operator he was quick and thorough. With his patients he was kind and gentle to a fault.

Dr. J. L. Davison said, in part, that Dr. Ross was a great lover of the rifle, the rod, and the gun. He thoroughly enjoyed primitive life and had the ability to "get close to nature" in her wildest and most silent moods. He was the life and leader of a camping-party. Dr. Ross united with his professional abilities an unusual business capacity—a unique combination. He was a keen surgeon and a straightforward man.

Dr. Allen Baines's theme was, "A Man and Friend." He spoke of many things—of his subject's energy and vitality from boyhood, his love for all things artistic—and his loyalty to friends. The late Dr. Hodder had said of Dr. Ross, Sr., "I like that man. He is so honest." And this was the upright son of an upright gentleman.

Dr. Marlow next read a carefully prepared paper on Dr. Ross's contributions to medical literature. He had contributed some seventy papers on surgery and gynæcology, and their perusal might well provide one with an adequate history of the progress of the subject during twenty years. The interesting fact was brought out that Dr. Ross was the first prominent surgeon on the American continent to attack the now obsolete operation of "Uterine Ventro-Fixation."

Dr. Powell's paper was to have followed that of Dr. Marlow but, owing to the lateness of the hour, it was not read.

Following the above papers, Dr. Thomas McCrae, of Johns Hopkins University, Baltimore, addressed the Academy briefly. He took as his subject, "The Treatment of Circulatory Diseases following Infectious Fevers." He first excluded rheumatism and syphilis from his remarks because they belonged to a special category of their own. They were frequently complicated by endocarditis and arteritis. He desired to deal with the condition frequently called a *fever heart,* but must enter objections to a faulty nomenclature. The heart, indeed, was frequently not affected in such a state, but the heart centre. The speaker deprecated the too common indiscriminate drugging of these cases. Digitalis, he said, was in many cases absolutely dangerous, while in others, such as fibrillation of the auricle, it was essential. Careful, differential diagnosis should come before everything. The point of attack should be first ascertained. Then treatment should be rational. Digitalis should only be used where it was clearly indicated. Strychnine might be valuable in cases where the blood-pressure was low or after typhoid. Speaking generally, the most valuable of nature's aids were rest and sleep. Every effort should be made to attain these ends. Morphia, for such a purpose, was often invaluable.

CANADIAN PUBLIC HEALTH ASSOCIATION

At the first meeting of the Canadian Public Health Association, which was held in Montreal, December 14th, 15th, and 16th, the election of officers resulted in the following appointments: President, Dr. C. A. Hodgetts, Ottawa; vice-presidents, Dr. M. M. Seymour, Regina; Dr. J. W. S. McCullough, Toronto, and Dr. E. B. Fisher, Fredericton; general secretary, Major Lorne Drum, M.D., Perm. Army Corps, Ottawa; treasurer, G. D. Porter, Toronto.

Executive council—Dr. P. H. Bryce, Ottawa; Dr. F. Montezambert, Ottawa; Dr. J. D. Page, Quebec; Dr. G. P. Lachapelle, Montreal; Dr. C. J. O. Hastings, Toronto; J. A. Murray, M. Can. Soc. C.E.; Dr. Chas. Douglas, Winnipeg; P. B. Fuston, M.R.; Dr. McKay, Saskatoon; Geo. T. Clark, Asso. M. Can. Soc. C.E., Saskatoon; Dr. C. I. Fagan, Victoria, B.C.; Dr. G. E. Duncan, Vernon, B.C.; Col. Carleton Jones, M.R.C.S., Dept. Militia and Defence, Ottawa; Dr. Smith Walker, Nova Scotia; Dr. E. O. Stevens, Moncton, N.B.; Dr. G. G. Melvin, St. John, N.B.; Dr. H. G. Johnson, P.E. Island; Dr. Jas. Warburton, P.E. Island; T. H. Whitelaw, Calgary.

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THE CHEMICAL BASIS OF LIFE

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IT was in 1868 that Professor Huxley, in Edinburgh, that city of intellectual light, made the memorable declaration for the first time in a formal fashion that life has a physical basis; this substance was at that time known as "protoplasm," it has since been named "bioplasm"; but it was the notion that life should have a physical basis at all that was unfamiliar to the biological laity at the end of the sixties. This notable declaration, especially from its having been made on a Sunday evening, was the subject of not a little acrimonious comment.

Life without a physical basis is unknown to science, whatever may be conceivable by the human mind. But the concept to which I now wish to advance is, that the time has come for us to realize that it would be more accurate to speak of the *chemical*, rather than "the physical basis of life." From the most general point of view that we can take, it must be obvious that no kind of matter, non-living, dead, or alive, can possibly exist outside the realm of the operation of the laws of chemical affinity. From this exceedingly wide conception there certainly flow several very important consequences related to our thesis, but my present standpoint is rather this, that what we know as the various manifestations of vitality are conditioned by, or actually related to, the precise chemical configuration or constitution of this substance—the so-called protoplasm.

Now this is not a truism: it is not self-evident that the same laws which govern purely chemical operations in the laboratory should govern in precisely the same way phenomena which we have always called vital. It is more intensely true that life is a chemical rather than a physical affair; for does not life depend in an exceedingly intimate fashion on the chemical affinity between oxygen and hæmoglobin as well as on the chemical affinity for oxygen possessed by the living matter which can only subsist by constantly incorporating that gas within it? Life is, in a very real sense, oxidation; but what is oxidation other than the chemical union of oxygen and certain other chemical elements—carbon, hydrogen, sulphur, or phosphorus—wherever these elements happen to be found? Oxygen is in a very real sense the *gaseous* basis of life.

It is equally true that digestion, for instance, is a chemical affair; it can proceed to a certain point as efficaciously in a glass vessel as inside the living stomach, and it is influenced in the glass vessel by agents and agencies in exactly the same way as it is in the living body: alcohol, for instance, slows the process in both cases.

But there is a school of physiologists which would go farther and assert that nutrition (assimilation) is from first to last a purely chemical affair, that it depends on the affinities of certain molecules of food for certain molecules of protoplasm. That great vital cycle which may be said to begin with the discharge of animal waste-products, which are then fermented by bacteria into the nitrate food for plants, are worked up by these plants into their food-reserves, are eaten by herbivora, which are eaten by ourselves, is, in each link of it, chemical; either a synthesis or a decomposition. The reason that gelatine by itself will not support life has been discovered to be that it does not contain a substance of some chemical complexity, tyrosin, found in all other nitrogenous food. That one man's food is his neighbour's poison must depend upon the chemical constitution of their tissues.

Or again, evidence is accumulating every day that the explanation of fatigue is a problem in organic chemistry; a fatigued person is one in whose body-fluids are circulating in solution certain "katabolites," as they are called, bodies derived from the living matter as the result of its prolonged activity. These are at present merely known as "fatigue-toxins," and fatigue is therefore called toxæmia, which is only the Greek for blood-poisoning, but that these toxins have a definite, though possibly complex, chemical constitution is beyond the possibility of a doubt.

What is happening other than a chemical union between the cat and the chloroform when we end its earthly existence? It is purely a matter of organic chemistry; we have saturated the molecules of the living cat by means of those of the non-living chloroform to such a degree that that manifestation of vitality, the cat's consciousness, has vanished. In other words, life can be chemically extinguished; and this is what is done every time there is poisoning by alcohol or the cyanides or perchlorides *et hoc genus omne*.

"Dutch courage" is a chemical affair; its basis, purely chemical and capable of being quantitatively estimated, is alluded to in the lines of Burns—

"Wi' tippeny we fear nae evil,
Wi' usequebagh we'd face the deevil."

When a person has become bad tempered through an attack of gout, or sleepy through an attack of jaundice, or sick from an attack of dyspepsia, or from having taken apomorphine, only a chemical explanation can be a complete one.

Now nothing is more familiar to the student of elementary chemistry than that heat facilitates and cold retards the activity of a chemical process, but it is equally well known to the student of elementary physiology that heat facilitates and cold retards the activity of a vital process. This does not indeed amount to a formal proof of the identity of life and chemical action, but it constitutes a high probability that they have something essential in common. When we make the remark that red-haired persons are usually irritable, we assert something that cannot mean that red hair in itself is the cause of bad temper. There must underlie both red hair and bad temper some one common antecedent chemical condition. That hair should be red instead of black or brown is a question of the chemistry of melanin; and the chemical peculiarity in the skin which is expressed as redness of hair must be intimately related to some other chemical peculiarity of the nervous system which expresses itself as irritability in the mental condition of the person in question. The absence of pigment from the skin and hairs of certain animals (albinos) is known to be associated with certain chemical peculiarities of their blood.

Or take the case of our sensations, always regarded as indubitable evidences of life. The vividness of these, even their very existence, can be made to depend on purely chemical conditions; the application of cocaine will abolish the sensation of pain, the chewing of gymnema sylvestre will abolish the taste of bitter things, while the taking of chloroform or of alcohol can modify or abolish certain sensations altogether. The toxins of fatigue have a distinct influence on the intensities of sensation, the tired person fails to perceive a certain phenomenon quite obvious to one whose nervous system is fresh.

The central proposition, however, is that bioplasm behaves essentially in the same fashion as a chemical substance does, that its activity is influenced by agents and agencies in the same manner as is a compound of high chemical instability. In support of this there is the noteworthy fact that living matter is constantly producing heat as the result of oxidations. This heat cannot have other than a chemical origin; it is indeed "vital" heat, but it is as truly chemical. It can be none other than the heat produced by the oxidation of carbon to carbon dioxide, of hydrogen to water, of sulphur to sulphuric acid, of phosphorus to phosphoric acid, all of which chemical substances we know to be constantly leaving the body. This animal heat is not physical; that is, it is not due to friction or to condensation of gas, but is as chemical as the heat set free when dilute sulphuric acid is poured upon zinc. Animal heat, so far from being, as the ancients thought, heat of an order entirely its own, is indistinguishable from heat of chemical origin. But if protoplasmic heat is of chemical origin, then *the* characteristic of life (evolution of heat) is a phenomenon within the realm of the laws of chemical activity. Indeed, Professor Rubner of Berlin, has shown that the animal body yields to a calorimeter in a given time almost exactly the same quantity of heat as would have been produced by the actual combustion of the food digested within that period.

Our next reason for believing that living matter behaves essentially as a chemical substance, is the way in which, as has been hinted, it is affected by a rise or fall of temperature. A fall of temperature depresses the energy of chemical unions, immobilizes molecules, makes all transformations of elements or of ions less easily accomplished; in a word, tends to create a condition of chemical inertness. Many chemical reactions and double decompositions which are suppressed altogether by a low temperature, are at ordinary temperatures quite feasible. Now protoplasm reacts towards cold in a precisely similar fashion. Cold depresses its activity, reduces the intensity of its energy-manifestations, immobilizes its molecules and generally inhibits its activity. This most familiar fact can only mean that vitality is lessened or suppressed because the molecular whirl of the living stuff has been profoundly interfered with or abolished. The muscles of our hands and face become "stiff with cold" because the chemical activities of the muscles are depressed by the cold, the molecules literally immobilised. The converse of all this is to be observed as regards heat. A rise of temperature accelerates the velocity of chemical reactions and in many cases carefully studied, does so to the extent of doubling the velocity for each rise of ten degrees centigrade. Now all biologists know that precisely the same thing is true of protoplasm; its activities are not only accelerated by a rise of temperature, but, in a number of cases studied as to time-relations, the same law of doubled effect for a rise of ten degrees has been observed to be obeyed. All this looks exceedingly like heat acting on a chemical substance.

In confirmation of this mode of viewing living matter we have the special case of what has been well called latent life. In this state the chilled or dried bioplasm is *not* dead, for it can revive to activity on the temperature rising or on water being supplied to it, but neither is it alive, since it is exhibiting none of the evidences of vitality—evolution of heat, carbon dioxide, and water. It is merely capable of yielding once more these evidences of vitality, and it can exhibit a brief electric current on the reception of a brief electric stimulus (Waller's "last sign of life"). It is potentially but not actually alive. But this complete arrest of vital manifestations without death of the protoplasm can only be explained in terms that are chemical. It is the exact analogue of those chemical substances which have been cooled or dried to such a degree that they have become quite inert in a chemical sense. Chemists recognize chemical inertia, physiologists have been forced to recognize physiological inertia. It admits of no doubt whatever that a substance continually capable of eliminating water, carbon dioxide, sulphuric acid, phosphoric acid, and urea must be a chemical substance. Now protoplasm does actually eliminate these compounds. Tissue-respiration and the production of animal heat cannot have other than a chemical basis. Living matter behaves in a typically chemical fashion as regards its affinities for certain elements capable of coming into union with it. In the healthy state it has been shown, for instance, that it is impossible to oversaturate the tissue with oxygen, iron, arsenic, iodine, sodium, or any other element. There is a certain power of combining with these substances possessed by the tissues, and beyond that affinity-limit the bioplasm cannot be coerced into taking up any more oxygen, or iron, or arsenic, or iodine, or sodium, or any other element. This peculiarity is explicable only on the assumption that the substance protoplasm has a structure determined by those conditions which determine the properties of all substances which react *inter se;* namely, the combining-powers of the different species of matter endowed with chemical affinities. This fixedness of limit for saturation of protoplasm by chemical substances explains the impossibility of indefinite increase in bulk of the nitrogenous tissues by over-feeding with nitrogenous food, of increasing the intensity of tissue-changes to any notable extent by the breathing of pure oxygen or of increasing, for instance, the iron- or phosphorus-content of the healthy red-marrow or brain. This possession of affinities for particular substances must be the explanation of the incorporation of drugs and poisons, and indeed of all food material itself: if this did not exist, no drug could be absorbed and no poison fixed in the tissues, which is only the chemical manner of saying that no drug could affect and no poison injure the body. Since poisons and food are absorbed, chemical affinity between the living matter and the food or drug is an absolute necessity. Researches are now being made, particularly by Dr. A. D. Waller, on the quantity of poisonous substance which can be fixed in a muscle in order to produce a definite result, for instance the abolition of its contraction. In this way, then, chemical substances are responsible for modifying or abolishing vitality.

But again, we have been forced to recognize a particular type of sleep as that of auto-intoxication by soluble substances alluded to provisionally as "fatigue-toxins": this type is often and quite properly described as sleep of *chemical* origin. It is the chemical effect on the brain-cells related to consciousness of substances produced by previous tissue-activity. In order to influence the brain-cells these toxins must for a time be chemically incorporated with the cerebral molecules, conceivably as "side-chains" (Ehrlich), and subsequently be subjected to oxidative elimination during sleep. It has for some time been recognized that bodily fatigue is chemical; the fatigue factor in sleep is necessarily no less so.

The objective aspect of fatigue in the nervous system has been minutely studied of late years, with the result that certain phosphorus-containing granules in the nerve-cells have been identified as the material basis of the energy production. When these granules are of a certain contour, recognized as "normal," the cells are fresh or "fit" in common parlance, able to discharge their nerve-energy (neurine); in exhausted states the granules are visibly altered, shrunken, etc. It is their chemically complex constitution that enables them to be the seats of dynamogenesis, apparently nothing chemically simpler than this kinetoplasm would suffice.

That tissues habitually act chemically is recognized in the expression quite familiar to all physiologists since the time of Claude Bernard—"chemical tone." This is only a more definite expression than "tissue tone," and it denotes that state of well-being of the tissues when each one is doing its duty in the best, that is in the most economical, way possible. The secreting gland-cells are in chemical tone when, supplied with the necessary amount of blood but no more, they manufacture aright their ferments and other secretions and send them with the proper amount of force towards the ducts, while they give to the lymph certain waste substances not needed by the cells and indeed deleterious to them if retained. Possibly the term "chemical tone" has arisen because in muscle there is a physical tone as well as a chemical, or rather the tone of muscle is capable of a double expression—(1) a certain tension of the fibres (incipient contraction) and evolution of heat which may be called the factors in physical tone, and (2) a certain state of chemical fitness or chemical tone shown by the evolution of carbon dioxide. Flabbiness is due to a loss of physical tone, chilliness and diminished excretion of carbon dioxide are due to the loss of chemical tone. The supposition that both sorts of tone are maintained by innervation, though an extremely interesting topic, does not enter into our present subject.

It is due to the discoveries in biochemistry of the last few years that we regard tissue-tone as dependent on the well-being of, it may be, quite distant organs. Thus, there is no doubt that muscle-tone is maintained by a chemical substance manufactured by the apparently insignificant suprarenal capsules. If they are diseased or extirpated the heart becomes notably weaker and the body muscles reduced in tonicity: this action is said to be carried out by an "internal secretion." Similarly, it has been demonstrated that the thyroid gland has a distinct influence on the skin and nervous system, the most debilitating condition known as myxœdema being produced when this comparatively small gland is diseased. Other still smaller glands have equally important controlling powers, the pituitary, as it is called, at the base of the brain, controls bone-formation in such a way that if it is diseased in early life the person grows up to be a giant. The profound influence exerted on the whole organism by the development of the sex glands is so familiar a fact in physiology that it need not be more than mentioned here.

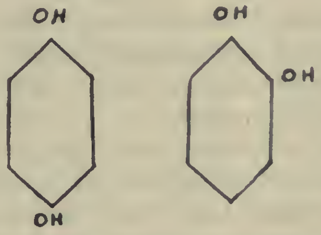
The differences in chemical constitution of the different tissues must be the reason why, for instance, in the child the growing bone absorbs more lime than does any other tissue, the nervous system more phosphorus, the blood-corpuscles more potassium and iron, the cartilages more sodium, and so on: each tissue must possess selective affinities in order that the precise chemical structure should not become a merely haphazard occurrence. Further, the potassium of blood-corpuscles cannot be replaced by sodium or lime indifferently; not only the same elements must remain in the tissues in order that they be in health, but precisely the same percentage of them, each for each. Professor Loeb, of Chicago, and many before him and after him, have shown that most minute changes in the concentration of the inorganic salts, the ions, bathing the various living tissues affect the health of these tissues in what would appear a quite disproportionate fashion. Certain marine eggs will not develop properly if immersed in a solution of salts differing only exceedingly slightly from normal sea water. Monsters and aberrent forms in the case of the simpler aquatic creatures can be artificially produced by thus tampering with the chemical constitution of the saline nutrient media for the eggs.

Certain diseased conditions seem related in some little understood fashion to the chemical constitution of tissues. Scurvy is due to a deficient absorption of potassium, rickets to that of calcium, a form of anæmia to that of iron, all chemical aberrations: gout and all that flows from it, is very largely an affair of the insufficient excretion or the over-production of sodium and calcium urate. Why there should be deficient absorption and deficient excretion, respectively, must be susceptible of only a chemical explanation. In gastric cancer there is deficient excretion of hydrochloric acid. It is very familiar that certain diseases have favourite seats of attack, the toxin of diphtheria, for instance, selects the muscles of the palate, of tetanus certain cell-groups in the nervous system, of hydrophobia certain other cell-groups in the nervous system, the poison of syphilis has a distinct predilection for the bones, the skin, and the central nervous system; the reason for these selective affinities must be ultimately a chemical one.

Similarly the most curious tendencies for certain drugs and poisons, both mineral and vegetable, to be absorbed by certain tissues—digitalis by heart-muscle, arsenic by bone-marrow and skin, strychnin by cells of the central nervous system, atropin by nerve-endings, nicotin by motor nerve-endings, chloroform by the cells related to consciousness,—must have an explanation that is wholly chemical: every day we are getting nearer to what it is.

The aberrant metabolism of calcium in old age with increase of it in the rib cartilages, in the larynx, and in the walls of arteries, as also the silting up of the membrana tympani with calcic salts is a chemical affair.

To pass to totally different examples: the realm of the sensations affords us several examples of the dependence of life on chemical conditions. Allusion has already been made to the modification of sensations by means of the presence of fatigue, drugs, and diseased conditions, but there is a department of the physiology of the senses devoted to the study of a relationship between the sensations and the chemical configuration of sensation-arousing substances. Thus, many years ago, Professor Haycraft of Cardiff, pointed out that if one arranged certain substances in order of their atomic weights, it was possible to show that their smell-producing and taste-producing powers were a function of their atomic weights. He demonstrated that the presence or absence of an atom of carbon or of hydrogen made considerable difference to the odour or taste of the bodies under examination. Since the date of this paper, a good deal of observation has been made on similar lines, and it is now known that, for instance, the mere position, whether symmetrical or not, of the hydroxyl groups in the benzene ring, determines the sweetness or bitterness of a compound, thus:—



the former being the bitter quinol, the latter the sweet catechol.

There is not much difference chemically between these two bodies, and what there is is entirely stereochemical, but the sweet and bitter-perceiving end-organs are evidently perfectly pre-adapted to be affected differently by the extremely slight alteration in the relative place of the side-chain.

We have evidence that such lowly living creatures as the fungi are exceedingly susceptible to such infinitesimal differences as those between a substance and its isomer. Certain sugars, able to be fermented by certain yeasts, are quite unable to be attacked by other but closely allied yeasts. Or again, a given yeast will readily ferment a sugar while totally unable to deal with another sugar of precisely the same percentage composition, but differing from the former only in having its hydroxyl groups relatively differently arranged in the chain.

Chemical constitution, nay, the possession of the element phosphorus, is an important factor in a subject so difficult of comprehension as heredity. Biologists seem to be in no doubt that the substance concerned in the transmission from parent to offspring of the potentialities of certain physical and psychical attributes is what the morphologists call chromatin, the chemists nucleo-protein. A high percentage of phosphorus is a characteristic of nucleo-protein, so that it is literally true that our existence chemically depends on the phosphorus of this absolutely microscopic substance. The fusion of the female nucleus with the male nucleus or sperm must depend on certain mutual chemical affinities operative whenever these two complementally endowed portions of living matter are enabled to come within a certain distance of each other.

But if this much be admitted, then it must follow that the congenital differences and the inherited peculiarities which distinguish the one sex from the other and one social stratum from the other, are, in ultimate analysis, based on chemical differences. There are no discernible differences between the physical organs and tissues of the coal-heaver and the sovereign; but it is inconceivable that there is not some real, specific, though undiscoverable, difference in the ultimate *chemical* constitution of the living matter of the two men, enough chemical difference to account for that comparatively small difference in their social behaviour which is denoted by the word "breeding."

While undoubtedly Huxley was right in teaching at the time he did that life had a physical basis, it seems to me interesting, if not as important, to realize that it also and as truly has a chemical one. While I have thus emphasized, it may be thought unduly, the resemblances between living matter and non-living substances capable of exhibiting chemical activity, and while I believe that the same laws govern the behaviour of carbon, and hydrogen, and oxygen, whether they are in living muscle or in dead muscle, or in sugar or in gunpowder, yet I should regret it exceedingly if I were understood to support the crude generalization that the realms of life and of chemical phenomena are indistinguishable and co-extensive. Far be it from me to suggest that the crucibles and condensers of our chemical laboratories contain the secret of the mystery of vitality or of consciousness.

LUETIC CIRRHOSIS OF THE LIVER

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THE complex interaction of morbid processes in the viscera related to the upper gastro-intestinal tract is exemplified by many cases of cirrhosis of the liver, as met with at autopsy. Even after death, such cases always present problems which are of interest to the clinician who seeks better indications for diagnosis, prognosis, or treatment.

The following case furnishes a striking example of difficulties of this kind, where histological evidence alone furnished a clue to the real nature of the disease. A recital of the details observed during life, as well as at autopsy, may be of use in the detection of similar cases, besides possessing the additional value of illustrating some of the effects which tertiary syphilis, under certain circumstances, may produce on both liver and stomach.

P. S. S., male, aged forty-three years, following the occupation of a clerk, and married, came to the hospital for treatment for diarrhœa, pain in the stomach, and abdominal distension. The symptoms commenced three years previously, there being dull, steady pain in the epigastrium, which came on about fifteen minutes after eating and lasted an hour or two. Occasionally three or four days would pass by without any pain, but there were constant signs of distress in the gastric region and occasional diarrhœa. Eighteen months ago, the abdomen began to enlarge, and the weight and strength to diminish. There was never any jaundice. The symptoms complained of had been worse during the last six months. He admitted taking a small quantity of spirits regularly, but denied venereal disease. He had been married for sixteen years, and one child had died of diabetes, but the other was alive and well. His wife had had no miscarriages.

On admission, the patient was noted to be poorly nourished. The sclerotics were slightly yellow. There was no dyspnœa or cyanosis or mental disturbance. Temperature normal. Pulse 80. Respirations 20. There was no œdema and no scars could be found. His superficial lymphatic glands were distinctly palpable. His arteries were thickened and his blood-pressure was high. The abdomen was markedly distended, the flanks bulging, and a reducible umbilical hernia present. The superficial abdominal veins were prominent. In the left upper quadrant of his abdomen was a hard nodular mass whose outlines were rather indefinite. It extended forwards as far as the ninth costal cartilage, and was palpable two inches below the costal margin. It moved with respiration and was slightly tender to pressure. It was not ascertained whether this was splenic or hepatic, but there was no evidence of enlargement of the liver on the right side. The right testicle was the size of an egg, hard and finely nodular; testicular sensation was present. Nervous system normal. Urine and stools normal. Blood: red cells 4,240,000, white cells 5,400, and 60 per cent. hæmoglobin. A differential leucocytic count showed 80 per cent. polymorpho leucocytes, 7 per cent. small leucocytes, 12 per cent. large mononuclears, and 1·5 per cent. mast cells.

Progress in Hospital: Eighteen days after admission 218 ounces of clear, straw-coloured fluid were withdrawn from the abdomen. It was alkaline in reaction, very rich in albumin and contained no blood or pus cells. Two weeks later 290 ounces more were withdrawn. There were severe attacks of diarrhœa alternating with constipation. There was steady loss of strength, especially during the last three weeks of life. There were symptoms of peritonitis during the twenty-four hours preceding death, which occurred four and a half weeks after admission.

The autopsy was performed four hours after death, and the following account is abstracted from the report: The body is that of a poorly nourished male, 170 cm. in length, and apparently fifty years old. Hair, dark brown, turning grey, bald on top of head. The pupils were equal. Abdomen greatly distended. Skin shiny. External genitals œdematous.

The thoracic organs were displaced upwards. There was no fluid present, but some adhesions were found at the base of the lungs. The lungs showed some hypostatic congestion. The trachea and bronchi were also congested. The diaphragmatic pleura was thickened on both sides.

The pericardial cavity contained a small amount of clear fluid. The parietal and visceral pericardium showed numerous, small, flame-shaped hæmorrhagic areas at the base and around the side of the left ventricle. The heart was dilated and slightly hypertrophied, weighing 325 gms. Apart from a slight fatty atheromatous change, the aorta and its large branches were normal.

The abdomen was completely filled with turbid yellow fluid.

The transverse colon was found greatly distended. The peritoneum was rough, granular, and showed recent purulent lymph. The great omentum was covered with purulent lymph and was adherent to the coils of small intestines which were intensely congested. The upper limit of the right cupola of the diaphragm was at the level of the lower border of the third rib. The mesenteric glands were not enlarged.

LIVER: The liver was greatly enlarged, especially on the left side. On the right side the liver was extremely adherent to the diaphragm by firm, vascularized adhesions. Weight, 2,875 gms. The surface of the liver was very irregular, lobulated in some places, puckered in others, and the right lobe was irregularly opaque, the greatest opacities being in the furrows; radiating lines of opacity extended from them. There was much thickening about the gall bladder. The cavity of the gall bladder was small, and contained only a few drops of yellowish green bile. The bile ducts were patent. The portal vein was occupied along its whole length by a bright red, partly adherent thrombus, the adhesions being along its anterior wall. A clear passage-way existed behind this thrombus. The splenic vein was normal, but at the junction of the splenic with the superior mesenteric the thrombus projected slightly into it. The cut surface of the liver showed some small, rounded, nodular areas about 1·5 cm. in diameter, near the upper surface, and the tissue surrounding them was pale and fibrous. The nodules showed creamy yellow centres and a pale yellow sinous contour. Four other smaller nodules were found in the middle of the liver. The liver substance was firm, and there was an increase in connective tissue. The blood vessels were empty. The lobules were congested. A few small areas of hæmorrhagic extravasation into the interstitial tissue were also observed. The track of the portal veins was extremely fibrosed and radiating contractions of the liver substance occurred throughout in this situation.

HISTOLOGICAL EXAMINATION OF LIVER NODULE: The nodule consists of degenerated matter enclosed by dense, fibrous, connective tissue, infiltrated by inflammatory cells, chiefly lymphocytes, polymorphonuclear leucocytes, and a few eosinophiles. A few feebly staining nuclei are scattered through the necrotic mass. The liver tissue in the vicinity is compressed and laminated. Diagnosis: Gumma of liver.

Sections of the liver tissue show the capsule thickened and markedly infiltrated with chronic inflammatory cells. The connective tissue is increased to a variable extent, being particularly marked about the portal systems, and sometimes separates individual lobules from one another, sometimes encloses groups of lobules, which on the whole are small and poorly defined. The intralobular veins are dilated. Bile pigmentation is scanty in the liver cells; a few areas of circumscribed necrosis are seen in a few lobules and a slight amount of fat infiltration is also present in a few places. The liver cells nearest the central vessel are large, deeply staining, and contain oval nuclei; in the mesial and peripheral zones of the lobules the cells are more irregular in appearance, the nuclei numerous and some show mitotic figures. Tracts of inflammatory cells were seen here and there, chiefly along the course of the larger blood vessels. In places they were collected into groups. In a few areas small hæmorrhages are seen. A few sections showed recent thrombi in the smaller branches of the portal vein.

SPLEEN: The spleen was removed with some difficulty, being adherent to the surrounding tissues. The capsule was opaque and tense, pale purple in colour. The organ was flabby, the cut surface pale red, and the Malpighian bodies indistinct. The connective tissue was not apparently increased. Weight, 1,000 gms.

Sections of spleen tissue show the capsule much thickened and its deeper layers consist of sclerosing, chronic, inflammatory tissue, the bands of which become continuous with the thickened fibrous trabeculæ of the splenic substance. Tortuous vessels traverse the trabeculæ and occasionally old hæmorrhages have taken place along their length, with very marked phagocytosis of the extravasated pigment. The Malpighian bodies are few in number, small in size, and fairly well-defined. The walls of the central vessels are rather thickened and the reticulum of the bodies is frequently seen to be unduly fibrous. The germ centre cells do not show active mitosis, and the peripheral zone of lymphocytes is reduced in size, numerous plasma cells occurring within it. The pulp sinuses are dilated and engorged. Desquamation of their lining epithelium is occasionally observed. Eosinophiles and polymorphonuclears are rarely seen. There is a hyaline change in the reticula of the pulp cords, and many of them are replaced by an excess of fibrous, connective tissue. Diagnosis: Perisplenitis; excessive fibrosis; old hæmorrhage; atrophy of pulp tissue.

The stomach measured 23·5 x 8·5 cm. The walls were pale purple in colour, the rugæ very faintly marked and numerous punctiform ecchymoses were present round the greater curvature. The pyloric ring was well marked. About the middle of its greater curvature the stomach was adherent to the liver and the mucosa at this spot showed an irregular ulcerated area 6 x 6 cm. with a polypoid surface and surroundings of pale colour. The walls of the stomach were thickened, particularly at this spot, being almost cartilaginous in consistence. A nodule similar to those in the liver was found closely adherent to the outer wall.

Histological examination of gastric ulcer: The mucosa is, for the most part, degenerated, and the lining epithelium is desquamated, and the glands appear as small, irregular tubules whose lining walls have nearly all been shed. The inter-glandular tissue shows much infiltration and the blood vessels are dilated. The cells are chiefly lymphoid. In one place it is completely lost, the submucosa forming the base of a shallow ulcer. In one or two places small hæmorrhages occur. The submucosa is much increased in thickness, its stroma being composed of very dense, fibrous tissue supporting numerous thick-walled blood vessels, around which are dense collections of round cells. The muscular coats are infiltrated slightly and the blood vessels congested. The serosa is also thickened. Diagnosis: Chronic interstitial gastritis; gastric ulcer (probably luetic).

The duodenum, save for a few punctiform hæmorrhages seen in the serosa, was normal.

The small intestine was 4·5 cm. in circumference. Its walls were œdematous and passively congested. Contents scanty and pale yellow in colour. There were no enlarged follicles, no hæmorrhages. A small Meckel's diverticulum was present 60 cm. from the ileo-cæcal valve.

Histological examination of wall of small intestine: The mucosa is practically absent. The villi are degenerated and only show in a few places. The glands are very scanty, with desquamation of the epithelium in places. The inter-glandular tissue is very fibrous, and in places shows small, round-celled infiltration. The muscularis mucosæ is shown as an irregular band. The submucosa is much increased in thickness and fibrosed. The blood vessels are thickened and congested. The muscular coat shows extensive fibrosis, while the serosa is thickened and shows a beginning fibrous change.

The appendix was 6·5 cm. in length. Its walls were thickened and the mucosa intensely congested. Small hæmorrhages were seen in the mucosa. The contents were pale yellow.

The large intestine, except for considerable passive congestion and slight œdema, showed no abnormality.

Microscopically the right testicle showed an increase in fibrous connective tissue. There were no areas of necrosis.

ANATOMICAL DIAGNOSIS: Unilobular, megasplenic cirrhosis hepatitis, and multiple gummata; chronic pericholecystitis; chronic pancreatitis; chronic peripancreatitis; thrombosis of the portal vein; atypical ulceration of the stomach with polyposis; secondary deposits in pyloric and lumbar glands; extreme ascites; early suppurative peritonitis (general); chronic adhesive pleurisy (right base and left, universal); right pleural effusion; hypostatic pneumonia; bronchitis; hæmorrhages of pericardium; dilated right auricle and right ventricle; chronic adhesive perihepatitis; chronic adhesive perisplenitis; giant spleen; subdiaphragmatic abscess (right); subacute hæmorrhagic appendicitis; passive congestion of the alimentary tract; chronic tubal nephritis with passive congestion; fibrosis of testicle.

The case which is outlined above presents the following interesting features which are worthy of comment:

The nature of the changes in the stomach: The superficial ulceration found at the autopsy was evidently the cause of the first symptoms recorded in the patient's illness. It is debatable whether this condition can be looked upon as of primary origin, or whether it was a secondary event in the course of the generalized fibrotic change discovered throughout the stomach. Lesions of this nature are of great interest, not only from the point of view of their causation, but also from their resemblance to sarcoma when they occur unaccompanied by pathological lesions elsewhere. Superficial ulcerations of the stomach mucosa, although comparatively rare, have been recorded as occurring in cases of cirrhosis of the liver as a result of the stagnation of the blood current from portal obstruction. This can hardly be the explanation in this case, for here was a very large ulcer with a firm, almost cartilaginous, border. It is probable that this ulcer was even more extensive at the time when the patient's attention was first directed to his stomach three years ago. Apart from ulceration, microscopic changes similar to those found in the stomach were also seen in the small intestine, and would account for the troublesome diarrhœa.

The condition of the liver: The changes in the liver were very marked. There was the great deformity already noted; an explanation of the atrophy of the right lobe might be sought in the partially thrombosed portal vein. It has been suggested that the blood current in the portal vein is largely double, the current from the splenic vein being directed more towards the left lobe of the liver, whilst that from the superior mesenteric goes more to the right, although some commingling of the streams must be admitted.

This case lends support to the view, in that the right lobe showed signs of feeble blood supply, with a thrombosed superior mesenteric, while in a case that came to autopsy recently at the Royal Victoria Hospital where an abscess in the spleen produced thrombosis of the *splenic* vein, atrophy of the *left* lobe of the liver was noted in the autopsy findings. In the case under consideration the thrombosis would also have the effect of diverting the blood more towards the left lobe and would cause it to hypertrophy to the immense size observed. As to the causation of the partial thrombus, many conjectures might be hazarded: a low grade infection from the intestinal tract, pressure from the marked ascites, changes in the overlying serosa, or very probably a stagnation of the current in the veins from the delayed circulation in the liver may have all contributed to its production. Rolleston remarks that portal thrombosis in cases of cirrhosis of the liver is far from common. Judging from the histological sections made from the portal vein in this case, the thrombus, whilst not of any recent origin, was not old enough to be considered the entire cause of the ascites, although it doubtlessly contributed considerably during the last few weeks of life.

Apart from these changes the liver presented other pronounced pathological lesions, (a) a number of round, soft-centred nodules surrounded by puckered tissue, (b) a great increase in the amount of fibrous, connective tissue. Concerning the nodules found, they were doubtlessly gummata. There was no evidence of actinomycosis or tubercle either in structure or by discovery of an organism. Furthermore, the distribution of the nodules and the appearance of the tissue about them was rather characteristic. That they were there for some time was evident from their degenerated centres and from the dense arrangement of the fibrous tissue about them. The distribution of the fibrous tissue was also suggestive, extending as it did in dense, radiating bands, particularly over the diaphragmatic surface and in the neighbourhood of the round ligament. It was also present in some quantity about the track of the large portal branches, and spread irregularly into the organ, producing large, scarred areas of liver tissue. The microscopic findings show extensive changes in all parts of the liver, so that the functions of the gland must have been markedly interfered with.

The condition of the spleen: The spleen in this case was about eight times larger than normal. Splenic enlargement is usually greater in biliary than in portal cirrhosis. Two main theories are usually advanced to account for the great size of the organ in cases of portal cirrhosis, (1) mechanical from backward pressure, and (2) toxæmic, i.e., circulating poisons reaching the spleen through the splenic artery. Rolleston says "that the enlargement of the spleen in such cases is primarily due to toxic action and is aided by increased venous pressure in the portal system." The degree of splenic enlargement in cases of cirrhosis has been looked upon by many clinicians as an index to the changes in the liver; this statement is borne out by the present case. However, the clinical detection of rapid enlargement of the organ is often impossible, owing to tympanites or ascites. The possibility that the marked enlargement of the spleen may have been due to primary disease in that organ requires brief notice. The dilatation of the splenic channels with increased fibrous, connective tissue throughout is a feature also met with in some forms of Banti's disease. In some cases of this disease, the spleen does not necessarily attain the size seen in our case, and in them syphilitic findings have also been described. Our chief reasons for regarding the changes in the spleen in this case as secondary to the liver are: (1) The flabby appearance of the organ at autopsy with no increase of connective tissue as seen by the naked eye; (2) the much greater degree of fibrotic change (both megascopically and microscopically) in the liver; (3) the fact that the onset of clinical signs as well as the duration of the disease in this case are not in accord with what is usually described in Banti's disease. On the other hand, spleens of this size are the exception, rather than the rule, in cases of hepatic cirrhosis with portal obstruction.

Pancreas: The pancreatic changes were part of the widespread alimentary lesions recorded.

Ascites: The ascites which occurs in portal cirrhosis is usually ascribed to the mechanical effects of the increased fibrous tissue. Rolleston believes that it is due to the effect of poisons, which the hepatic inefficacy is unable to prevent from circulating, "having a lymphagogue action and therefore inducing an exaggerated flow of fluid into the peritoneal cavity." In this case there were a number of factors, each able to bring about marked ascites; the increased fibrous change, especially round the gummata, in the liver, a perihepatitis, partial thrombosis of the portal vein, chronic peritonitis, and towards the end a failing heart; so that it is impossible to say with any accuracy the part played by any one of these factors in this connexion. Undoubtedly it was caused in the earlier stage of the disease by the liver changes along with the chronic peritonitis, and towards the end the portal thrombosis and failing heart contributed. The dense, vascularized adhesions existing between liver and diaphragm and about the spleen are indications that some of the blood from the congested portal area was diverted by these routes into the general circulation. They were compensatory in action.

The recent peritonitis with small, sub-diaphragmatic abscess found at autopsy was most likely due to the tapping and the greatly lowered resistance of the patient. The favourable ascitic culture medium greatly facilitated the growth of any organism accidentally introduced.

FROM Indian Head and Rosser come reports of an epidemic of scarlet fever. At the former place five deaths occurred within a few days, and all public places like schools and churches were ordered to be closed by the provincial board of health.

IT might fairly be said that smallpox is prevalent in the province of Quebec. As long ago as July twenty cases were reported, and by January the number had increased to fifty-six. These figures give no indication whatever as to the prevalence of the disease, and the latest returns show that there are one or more cases in fifty-six separate municipalities. From far-away Athabaska Landing comes a report of an outbreak there, where an hotel had to be closed for fumigation and the inmates vaccinated.

A SERIOUS charge is brought against the town of Sarnia by the Lindsay *Watchman-Warder*. According to this newspaper, Sarnia has been suffering from an epidemic of typhoid which it is said might have been prevented but for the suppression of the report revealing the danger. The excuse given for concealing the facts was the fear that the business of the town might be affected. From the *Chatham News* it appears that Dr. McCullough, the health officer of the province, has been conducting an inquiry into the cause of the epidemic. It seems that during the past year one hundred and sixty cases of typhoid have been reported, and twenty witnesses were examined upon the subject. One witness affirmed that a break in the intake pipe has been allowing infected water to enter the town for the last two years.

ON THE AMMONIA COEFFICIENT IN A CASE OF SEVERE VOMITING IN PREGNANCY

BY A. W. M. ELLIS, M.B.

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IT was contended by Williams in 1906 (Johns Hopkins Bulletin), on the strength of four cases of severe vomiting in pregnancy, that, whenever the amount of ammonia in the urine of such cases amounts to more than 10 per cent. of the whole nitrogen excreted, the pregnancy should be artificially terminated. For, according to his view, such a condition indicates a toxæmia likely to lead to a fatal issue with symptoms resembling acute yellow atrophy of the liver.

By the kindness of Dr. Graham Chambers, under whose care at the Toronto General Hospital the patient to be referred to was, in consultation with Dr. McIlwraith, successfully treated, I had the opportunity of examining the urine in a case of severe vomiting in pregnancy similar to those cases referred to by Williams. The clinical features of the case are given in the following account, which is from the notes kindly furnished by Dr. Lowrie, who was at the time interne at the General Hospital:

Mrs. H., aged twenty-eight, admitted October 21st, 1910, was married a year ago. Menstruation, previously regular, ceased three months ago. Nausea and vomiting, at first only on rising in the morning, persisted for six weeks, gradually becoming more severe till in the week before admission even water produced the attacks, and rectal feeding had to be resorted to. On admission, the patient, who seemed fairly nourished, had a dry tongue with brown coating, the abdomen was hypersensitive on palpation, and the bowels constipated. The smell of acetone was noticed in the breath, and the vomitus, which was almost neutral in reaction, gave the tests for acetone. Absolute rest was prescribed and all visitors excluded. As it was found that even sips of water started the vomiting, nothing was given by the mouth, and rectal feeding alone relied upon. Three nutrient enemata, each containing an egg, 5 ounces of peptonized milk, half an ounce of glucose, and 20 grains of salt, and four saline enemata of 8 ounces each were given daily.

After three days sips of malted milk were at first partly retained, but soon the vomiting returned more severely and feeding by the mouth had to be entirely given up. Four days later another attempt to administer small quantities of milk and oyster broth by the mouth was similarly only for a short time successful. Finally, only after ten days in hospital it began to be possible to give, without causing vomiting, small but gradually increasing amounts of food, and so at the end of another week (November 7th) to reduce the enemata to one a day. On November 9th, a slight, transient cystitis developed which was treated and cured in two days. The patient was by that time able to take poached eggs and toast, and improved thenceforward steadily, so as on discharge (November 18th) to be able to take any light food. Five and a half months later the patient was delivered of a normal, healthy, full-term child.

On admission into the hospital in October the urine was found to contain no sugar or albumin, but gave the reactions for acetone and diacetic acid strongly. On October 26th, in a sample of the urine, the ammonia was estimated by the formalin titration method, the total nitrogen by Kjeldahl's method, and the former found to amount to 32 per cent. of the latter. From that time on the urine was collected, as far as possible, completely, and the results of my analyses are contained in the table on page 110.

The figures given show that the ammonia coefficient throughout the period from October 26th, when it was first examined, till November 7th, was always found to be considerably higher than the limit of safety as defined by Williams, and on November 3rd an intense acidosis was evident. But there was no vomiting after November 1st, and on November 5th, when the amount of ammonia was still undiminished, the patient was obviously very much better and was able to retain increasing quantities of food. Even so, she was of course receiving far short of the physiological amount of energy in her food, and therefore the high ammonia coefficients would appear to have been determined rather by this fact than by any such toxæmia as that inferred to exist in all such cases by Williams. That prolonged vomiting in infants may result in still higher ammonia coefficients is well known from the reports of Czerny and Keller, and the highest recorded figure is in a case of hysterical abstinence (70 per cent.) given by Nebelthau.

The doctrine, therefore, that in the vomiting of pregnancy, if the ammonia coefficient rises above 10 or 15 per cent., abortion should be resorted to, is to be abandoned.

Date	Volume in c.c.	passed in hours	Total nitrogen	Nitrogen as ammonia	Coefficient	Acetone	Diacetic acid
			g.	g.			
Oct. 27	100	8	0·49	0·145	29·4	++	++
" 28	875	24	3·24	0·659	20·5	0·28g.	1·39g.
Nov. 1	725	24	2·82	0·832	29·9	1·58g. Oxybutyric acid	3·56g.
" 3	1180	48	3·76 (in 24°)	1·54	37·5	++	++
" 4	865	20	5·78 "	1·78	31·0	++	++
" 5	985	24	3·93 "	1·39	36·3	++	++
" 7	1140	27	5·38 "	1·40	25·9	++	++
" 8	930	24	8·79 "	0·90	10·4	++	+
" 9	1120	24	4·70 "	0·65	13·8	+	0
" 16	....	..	0·63%	0·112%	17·8	—	—

The total nitrogen was estimated by the Kjeldahl method, the ammonia always by the formalin method, controlled in certain instances by Folin's method; the differences between the results by these two methods were not such as to indicate any further abnormality in the partition of the excreted nitrogen. All the specimens of urine were acid except that of November 9th.

ANGIOMA OF THE LARYNX

By G. Sterling Ryerson, M.D., C.M., L.R.C.S., Edin.

ANGIOMA of the larynx is a very rare affection. In a private and hospital practice of over thirty years I have seen but the one case, the history of which I am about to relate. Solis Cohen states in his text-book that he has not seen any case. Fauvel reports one; Morrell Mackenzie, one; Elsberg, one; Shurly, one; Frankel, two; and Heinze, one. No doubt there are more to be found if one spent the time necessary searching the literature, but enough has been said to show the rarity of these cases.

Histologically, the cavernated tissue in angioma is lined with a single layer of epitheloid cells. The vascular spaces may be empty or filled with laminated clots. The surface partakes of the epithelium of the part. The stroma may undergo mucoid degeneration, giving the growth a mixed character.

Angioma cavernosa presents the appearance of a raspberry-like mass and may be either sessile or pedunculated. It may appear in any part of the larynx, but is most common on the vocal cords. The treatment which has hitherto been used has been galvano-cautery, or crushing with forceps, often with disastrous results.

St. Clair Thompson relates a case which had been seen by Morrell Mackenzie and others, in which many attempts had been made to treat the patient with galvano-cautery with unfortunate results. A case was shown by C. J. Symonds at the section of Laryngology, Royal Society of Medicine, in 1905. Sir Felix Semon saw the case, and said that it was a very rare condition and advised leaving it alone. In Shurly's case tracheotomy was done to relieve dyspnœa. The growth entirely encircled the lower laryngeal and upper tracheal region. In opening the trachea the growth was incised, which gave rise to uncontrollable hæmorrhage, which resulted in the death of the patient. Ferreri reports a case of angioma of the size of a walnut on the lower portion of the left vocal cord. It was crushed with a forceps. Alarming hæmorrhage took place, and the patient died forty-eight hours later with infective pneumonia. W. G. Gibson reports the case of a cavernous angioma

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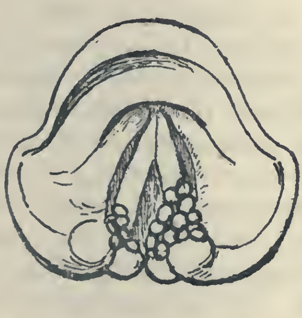
of anterior portion of left vocal cord of the size of a pea. It was removed with forceps and cauterized. There was very little bleeding. It will be seen, therefore, that the removal by cautery or surgical methods of a laryngeal angioma is accompanied by a real and serious danger of hæmorrhage.

It was after a study of the literature of these cases of angioma of the larynx that I determined to try radium, which has led to my giving attention to radium therapy on a larger scale.



The following is a brief account of my case. A lady aged fifty-five, single, was sent to me by Dr. Kerr, of Elora, May 6th, 1909. She complained of difficulty and oppression of breathing at times, but with no pain, hoarseness, or cough. No family history of growth or tumours. Her mother had "thick neck" and died of heart failure at an advanced age. Her present difficulty began about a year before with stiffness and pain in the tongue and occasional difficulty in breathing. She said some enlarged veins at the back of the tongue had been burnt off. She had no difficulty in swallowing. An examination of the larynx showed on the left side on the anterior surface of the arytenoid, on the ventricular band and along the external margin of the vocal cord, a bluish purple mass lobulated and presenting the appearance of a small raspberry. On the anterior surface of the right arytenoid was another similar body, but smaller, which did extend beyond the arytenoid. The accompanying drawing gives a fair but somewhat exaggerated idea of the appearance of the growth. In view of the disastrous effects of operative interference, I determined to try radium, and obtained from Dr. E. E. King a tube of German radium of unknown activity. With Dr. King's assistance an applicator was devised and treatment begun. Meanwhile, I communicated with Dr. Wickham, in Paris, who advised a special applicator furnished with three mg. radium, activity 1,000,000. This was obtained in due course and treatments continued, at intervals of three months, for a year. At the end of that time there was a considerable improvement, but much of the mass still remained. I then obtained a small disc containing 10 mg. of radium, activity 500,000, and had an applicator made so that it could be introduced into the larynx. I continued the treatment with the former intervals, when a marked improvement was soon noticeable. By April, 1911, it had disappeared, except a small point which I thought I could venture to cauterize with electrocautery without danger. I did so, and to-day where formerly there were two vascular growths there are two small cicatricial nodules.

Remarks. 1. The time taken in the cure of this case would have been reduced at least fifty per cent. if I had had the requisite appliances at the outset and had had the experience which I now possess. This was my first personal experience of radium treatment.

2. A great difficulty was the impossibility of retaining the applicator in place longer than three minutes at a time, and more generally one minute, in spite of liberal cocainization.

3. I have found that angioma and nævi resist radium in direct ratio with the age, the older the subject the greater the resistance. This no doubt applies to the mucous membrane as well as the skin.

4. This patient had also a small goitre. I could not make out that it bore any direct relation to the throat lesion.

A writer has remarked that patients with angioma of the larynx suffer from time to time from œdema of the larynx, which would explain the attacks of difficulty of breathing.

At the mid-winter session of the Valley Medical Society, held at Bridgetown, an address was presented to Dr. L. G. De Blois, a graduate of the year 1861, in honour of his having passed his fiftieth year in the practice of medicine. Amongst the signatories to the address were Drs. Sponagle, Connor, DeWitt, Morris, More, McKinnon, Balcom, Reid, Morse, McDonald, and Young.

BIOLOGICAL PRODUCTS

By Charles H. Higgins, D.V.S., F.R.M.S.

Pathologist, Dominion Department of Agriculture, Ottawa

THE title of my paper confronts us with a large variety of preparations, some of which have secured an enviable reputation in the diagnosis, prevention, and treatment of disease; many are undergoing the evolutionary period, a few of which will eventually be discarded, while others have been wholly unable to survive the vicissitudes of either practical or theoretical experimentation.

It is not my purpose to mention individual products and indicate the results, beneficial or otherwise, following their use in the diagnosis, prevention, or treatment of diseased conditions. My effort, however, will be directed to the consideration of certain of the more important problems associated with their history and manufacture. The special indications for their use, the methods of application, dosage, and the results obtained therefrom, naturally belong to the clinician, although their origin and the technicalities surrounding their preparation are usually the result of detailed laboratory study.

I desire to premise my remarks by the statement that the development of my theme will be from the very broad standpoint of preventive medicine as related to public health problems, and will, in a general way, include all biological products, whether the minor details refer to the more restricted acceptation of the term as embracing comparative or human medicine. We cannot separate these products into distinct classes, one for animals and another for men, as both men and animals have benefited greatly from their preparation, and both are also interdependent for their very existence. The problems in dealing with diseased conditions in either case are based on the same general principles, and infectious disorders occurring in both are treated similarly.

Biological products, as we now interpret the term, are preparations designed for the diagnosis, prevention, and treatment of diseased conditions in men and animals caused by specific infectious

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agents or poisons. They include normal sera, antitoxic sera, antibacterial sera, toxins, attenuated vira, and bacterial vaccines.

To enumerate all of the products which are to-day available would require much more time than is at our command, and it is further questionable whether such a course would be of interest to members of this section, all of whom are more or less familiar with the more important of those in common use. We are, however, directly concerned with their evolution, and the desired laboratory requirements for their manufacture and subsequent testing are details of vital importance in the consideration of the broader aspects of their relationship to public health problems.

The development of any new field of science is largely dependent upon the individuality of the workers and the problems with which they are forced to contend. The developments in the preparation of biological products offer no exception to this general rule. Leaving out of consideration the introduction of small-pox vaccine by Jenner, their history is inseparable from the advances of bacteriological knowledge, and this knowledge is in turn associated with the improvements made in the grinding of microscopic lenses and the mechanical construction of compound microscopes.

Pollender in 1849, and Davaine in 1850, expressed the opinion that anthrax in animals was closely related to the presence of what they termed sticks and rods in the blood from cases of this disease. It was, therefore, but a step to the definite proof by Koch in 1875, when he described the morphology of the organism, that these bodies were the cause of the disease.

Pasteur, experimenting with chicken cholera in 1880, found that the causative organism could be cultivated in a specially prepared chicken broth. Returning to his laboratory after an absence of a few days, he observed that cultures made prior to his departure no longer produced the disease in susceptible fowl. Securing a fresh organism from another outbreak, he found that the fowls previously inoculated did not contract the disease, although susceptible fowl not so inoculated became affected and died in the usual period. He was thus able to demonstrate, largely by accident, that cultures of the bacteria responsible for the ravages caused by this disease could be attenuated and that such attenuated cultures were capable of establishing resistance or immunity in susceptible animals when used in suitable doses. Applying this knowledge to anthrax, he was able, in 1881, to prepare an attenuated virus which conferred immunity against this affection. Anthrax vaccine is now a commonly used biological product, although there is danger, and serious losses have been reported following the use of an improperly prepared or impotent product. In connexion with these attenuated vira, it is of interest to note that investigators have shown that the inoculation with an organism usually harmless, may be capable of conferring a passive immunity against a disease. For example, the bacillus pyocyaneus confers immunity in sheep against anthrax for a limited period.

From this groundwork on immunity and the constant increase in our bacteriological knowledge, we have witnessed the introduction and extensive use of bacterial filtrates. Some of these, such as tuberculin, introduced by Koch, and mallein, introduced by Von Preusse and Kalning, are well known diagnostic agents and are often improperly called toxins. With the preparation of the bacterial filtrates just mentioned, which we now know to be thermostable, further experiments indicated the development of true toxins, such as diphtheria and tetanus, which are not thermo-stable. The unheated sterile filtrates from these latter organisms were found to be fatal in extremely minute quantities when injected beneath the skin of suitable experimental animals. With the knowledge that recovery from an attack of diphtheria conferred an immunity against a subsequent attack, it was considered that the introduction of the toxin into the body of an animal in non-fatal doses would cause the formation of a neutralizing substance or anti-toxin, and that this in turn would be capable of destroying the poisnonous effect of the toxin. This theory was sound and Von Behring prepared an anti-toxin serum from dogs and sheep. Aronsoid used goats, and later Roux employed horses. While the use of the smaller animals established the general principle of the formation of an anti-toxic substance in the blood of a treated animal, the expense involved in the preparation of this serum would almost prohibit its general application if necessity required the use of the smaller animals. We may, therefore, consider that while Von Behring was the originator of the method, we must credit Roux, a pupil of Pasteur, with the practical solution of the means by which an adequate amount of serum could be secured to meet the demands for controlling diphtheria in the human.

Anti-bacterial and anti-toxic sera are prepared by inducing a high degree of immunity in the larger animals against the disease for which the anti-bacterial or anti-toxic sera are desired. The horse, being a very tractable animal, has proven the most satisfactory and is the one most frequently used. The horse was selected as a large amount of serum is available once the immunizing process has reached a satisfactory point. Great care, however, must be exercised in the selection and subsequent care of the animals required for the experiment. Even with the most painstaking care one is not sure of securing a subject, the serum from which after the requisite treatment will show a satisfactory degree of potency. In some instances as many as an average of six horses are required to obtain one giving a satisfactory serum. When horses are immunized in the preparation of anti-plague serum, even a greater number may be required.

The anti-bacterial and anti-toxic sera are now well and favourably known, having demonstrated their efficiency in preventing and controlling losses from the diseases for which they are prepared.

With the preparation of these sera, as with the preparation of any new medicinal agent, it was but natural that some means of standardization should be sought. The studies of Ehrlich and the elaboration of his side-chain theory explained the chemical reactions involved in the process, and he was first to take the necessary steps towards the standardization of anti-diphtheritic serum. Rosenau and Anderson, in endeavouring to establish a unit on which they could always depend, have given us an elaborate process for accomplishing this end. They found that in the dry state serum would retain a certain strength for an almost indefinite period if kept in a vacuum and at a constant temperature. It is their standard unit which is now used for the guidance of manufacturers in the United States, and a suitable amount is supplied for the use of each at certain stated periods. Their method of testing requires accurately graduated glassware, a standard toxin which must be made by growing a suitable strain of the diphtheria organism on a special liquid medium, and an adequate supply of guinea-pigs of 250 grammes in weight.

I may here mention that the details which must be observed when manufacturing any of the biological products requiring the use of large cultures are very exacting. We must not only have a pure culture of the organism and a suitable medium, but we must have a strain capable of rapid growth on the surface of a liquid medium. All strains do not possess this feature. For some purposes solid media may be used, but for routine work we must accustom any given organism with which we may be working to the artificial conditions necessary for our particular requirements. The strongest diphtheria toxin producer is not necessarily the most virulent culture, nor are we able to produce a satisfactory mallein or tuberculin from the most virulent strains of their corresponding organisms. Detailed experiments must be carried out with a large number of strains before we can hope to secure one suitable for the production of the large amounts of chemical bye-products required in a limited amount of time.

Many curious phenomena are observed in growing large cultures for any of these purposes. One of the most annoying is the ease with which large cultures of certain bacteria become contaminated, while very crude bacteriological technic will suffice in preventing contamination where other organisms are used. In the preparation of tuberculin, contaminations are rare, while the opposite is true when dealing with the bacillus mallei in the preparation of mallein. Large cultures of diphtheria are also contaminated with organisms which seldom or never appear in other special or routine work where the same incubating chamber is used. These occurrences are difficult to explain. I have considered that the aroma coming from a large culture has an important bearing on this feature. All bacteriologists are familiar with the odour coming from cultures commonly seen in any laboratory, and we similarly have distinct characteristic odours given off from cultures of bacillus mallei, bacillus diphtheriæ, bacillus tuberculosis, and others. So important are these odours that a laboratory worker with a delicate olfactory organ can distinguish a pure from an impure culture. Under such conditions, where we have no diagnostic method of staining, I consider the microscopic examination a confirmatory procedure and not a primary factor. I am, further, of the opinion that the aroma has a direct relationship to the efficacy of any of these bacterial products.

Normal sera, or the sera from a normal or untreated animal, may be used with more or less benefit in diseased conditions which are but slightly or wholly non-infective to the animal from which they are taken, such as normal horse serum for tuberculosis. Normal bovine serum has been used with a certain degree of success in a few cases of human glanders and is worthy of further trial. Normal sera from other animals, such as goats, hogs, dogs, will doubtless be used just as soon as a pioneer therapeutist who has the courage to determine their value in suitable cases and an individual versed in the technic of preparing the serum join forces. While the occasions for the use of normal sera are naturally somewhat limited, they are deserving of more attention than they have heretofore received.

Killed cultures of bacteria, now known as bacterial vaccines, have occupied a very important place among biological products for many years. None of these have received greater attention than that known as Haffkine's prophylactic consisting of the killed cultures of bubonic plague. The bacterial vaccine receiving the most attention at the present time is the anti-typhoid vaccine, the efficacy of which as a prophylactic is well established from the numerous statistics available.

With the further development of bacterial vaccines we have, from a bacteriological standpoint, an extensive field opened before us. These products require great skill in their preparation if they are autogenous in character and properly standardized. In a large measure their success depends, as with other products, upon the individual skill of the producer. All who are trained in the art and science of medicine do not make good clinicians, nor do they become equally proficient in the various specialties. Likewise, all pathologists do not acquire an equal proficiency in the preparation of these vaccines. The results are largely dependent on individual idiosyncracies and judgement. The combined or polyvalent vaccines appear to be the most promising, and will undoubtedly be the ones receiving the most general use. They have the advantage of being prepared from several strains of the same organism and are intended for use in those conditions where the infecting agent is similar to the types from which they are manufactured.

With respect to the necessary facilities required for the preparation of biological products, I will add but a few words. The buildings need not be expensive nor elaborately equipped. They should be spacious and well lighted, well ventilated, and provide plenty of room for the laboratory workers and the animals required in the conduct of the work. The details must be considered individually in such instances, according to the work which is to be undertaken. All laboratory workers have a certain pride in their surroundings, and it is to be expected, considering the risks constantly taken while working with large cultures of the most virulent infectious agents in the preparation of biological products, that we should desire to safeguard our own existence in every possible manner. In no line of endeavour is the accidental hazard so great. This feature should be considered of paramount importance in the construction and equipment of buildings for the purpose.

You are aware that a biological product prepared by a certain manufacturer always gives uniform results and is seldom or never followed by after effects of a serious or annoying nature. When this particular product is for any reason unavailable and a substitute is used in its stead, less favourable results follow and serious after effects may occur. The repeated occurrence of similar difficulties may be anticipated, until it becomes the business of some properly constituted authority to examine all such products manufactured or offered for sale in Canada. The manufacture of the products now used in Canada provides a source of revenue to individuals and companies, and, therefore, the potency is, to a very large degree, dependent upon the integrity of these individuals or companies. On the whole the integrity displayed has been of a very commendable order, although we are aware that the trade relations of this country were seriously jeopardized a few years ago by an outbreak of foot-and-mouth disease in the United States which was finally attributed to the use of a contaminated virus in the preparation of small-pox vaccine.

At the present time, the biological products available for use in Canada, with a very few exceptions, are imported, and there are at present no restrictions exercised over the facilities provided for use in connexion with their manufacture, nor is any standard established to which they must conform before being offered for sale. As a laboratory worker with an intimate knowledge and an extended experience in the manufacture of certain biological preparations, I am convinced that there should be some restrictions placed, not only on their sale, but on the safety of the surroundings and the conditions maintained during their manufacture.

R. Beverley Wilson, of Leamington, who is charged with having practised medicine without a license, was acquitted by Judge McHugh. It was held that the practice of osteopathy was not a breach of the Medical Act. A case against his mother was also dismissed on the ground that although she had practised upon a patient, she did not receive any remuneration. The charge was first heard by Police Magistrate Selkirk, who dismissed the case, and his view was confirmed on appeal.

SOME OBSERVATIONS ON CHRONIC MYOCARDITIS

BY JAMES THIRD, M.D.

TO the busy general practitioner, the integrity of the valves of the heart is all important. As a rule he is quite indifferent as to the condition of the myocardium. A glance at the mortuary tables of any large life assurance company will show the truth of this statement. In the annual report of the receiver-general for the province of Ontario, myocarditis is not even mentioned as a class. And yet, the fact remains that chronic affections of the valves, *per se*, if certain ulcerative conditions be excluded, seldom if ever cause death, so long as the myocardium is in fairly good condition. When the myocardium becomes seriously involved in an associated or distinct pathological process, then, and not till then, does the patient enter on the field of actual danger. That danger is proportionate not to the extent of the valve involvement, but to the extent of myocardial weakening. A knowledge of the extent of this weakening is essential both for prognosis and treatment.

Let us consider the clinical aspects of one type of case. This type may be termed the business man's heart. It is largely the result of the high pressure demanded by the conditions of modern business life. It is not necessarily the result of a struggle for existence. More often, in this country at least, it is the result of a struggle for supremacy and the social position and power which supremacy gives. The man is usually in the early afternoon of life. Day in and day out, he sits before his desk. He indulges to the limit in the luxuries of the table. He takes few holidays. He smokes heavily and may take wine in, what he terms, moderation. Even if a teetotaler, he does not escape. It is a common observation that many teetotalers are excessive eaters. Over-eating probably kills more people than over-drinking at the present time. This is no argument in favour of drink, however. He finds himself increasing in weight and in abdominal girth. As a result of his sedentary habits and excessive indulgence at the table, certain toxines are developed in his sluggish intestinal tract. These, while in the blood, exert an injurious influence upon the nutrition of the

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Read before the Canadian Medical Association, Montreal, June 7th, 1911.

heart and arteries, and in their final elimination tend towards the development of a chronic, interstitial nephritis.

Before long, symptoms of undoubted myocarditis make their appearance. These are a gradually developing cardiac weakness, with dyspnœa, at first on the stairs or a grade, later when at rest, and finally, even in the sitting posture. Palpitation is a frequent symptom and this the patient usually attributes to stomach disturbance, an inference that may be more or less correct. Some pain in the precordial region, expecially after exertion, is a fairly early symptom. This is due to a stretching of the cardiac muscle. The area of cardiac dullness is increased. The apex as a rule is displaced down and out. A mild bronchitis with some œdema in the posterior bases of the lungs may be present. A somewhat later, but important, symptom is pain in the right hypochondrium. This may be due partly to stretching of the capsule of the liver, as that organ gradually enlarges, and partly to hyperalgesia and rigidity of the overlying muscles, conditions always present except in the most advanced cases. There is usually some dizziness. A small percentage of cases have momentary periods of unconsciousness. These have been regarded as examples of minor epilepsy of vascular origin.

The psychologic influence of the patient's knowledge of the presence of cardiac incompetence is often very marked. General irritability of temper, difficulty of mental concentration, introspection, amounting in some cases to actual despondency, are common. There may be slight œdema of the feet and legs towards the close of the day. As a rule there is well marked dilatation of the venules of the cheeks, especially over an area about 1·25 in. in diameter, slightly internal to the malar prominence. There is also general engorgement of the larger veins of the body, the pulse is irregular, and the radials may show evidence of sclerosis.

While the amount of urine voided during the day is diminished, frequent and increased micturition at night is the rule. The urine may be normal, but of low specific gravity, or it may show the change of an incipient, chronic, interstitial nephritis. In the later stages, the urine is greatly diminished and loaded with albumin. The blood pressure may or may not be elevated.

Tracings from the radial artery and jugular vein usually show, in fairly advanced cases, persistent arrhythmia with more or less paralysis of the auricles. The paralysis of the auricles is the result of the high venous pressure, and is evidenced by the absence of the auricular wave in the jugular tracing. At the same time, in this class of case, there is complete absence of signs of organic, valvular disease. There may be a soft systolic murmur at the apex, due to muscular insufficiency, but it is rarely transmitted to the axilla and often passes off during rest or treatment.

There is absence of diastolic murmurs in cases of functional pulmonary or aortic insufficiencies. Personally, I am unwilling to make a diagnosis of chronic myocarditis unless there is convincing evidence of arterio-sclerosis, and unless all other causes of cardiac incompetence can be satisfactorily excluded.

In arriving at a diagnosis, age is an important factor. If symptoms of heart disease develop slowly in a person who has passed mid-day in life, it is fair assumption, until proved otherwise, that degeneration of the heart muscle is responsible for the symptoms, or as Babcock puts it, "Hypertrophy of the heart in an individual of middle age may be regarded as synonymous with degeneration."

Nocturnal dyspnœa, attacks of angina pectoris, the discovery of albumin and casts in the urine, point strongly to a well-marked, chronic myocarditis. A blood pressure constantly above 150 mm. suggests degenerative change in the cardio-vascular-renal system. A weak first sound at the apex, extra-cardial causes being excluded, indicates a weakening of the left ventricular wall. In addition to the arrhythmia, the sphygmogram may show the plateau top. This may mean increased resistance in the peripheral circulation or a lowered pumping power on the part of the left ventricle.

The pulsus alternans is occasionally observed. It always implies a yielding of the heart muscle to the strain put upon it—a failure of the function of contractility. A comparison of the pulse in the recumbent and erect positions should never be omitted. A variation in rate of fifteen or more, nervous disturbances being excluded, suggests myocardial weakening. In addition, the patient should be required to walk briskly about the room or ascend a flight of stairs. If these movements develop a blowing murmur at the mitral area, it is fair to assume that there is some degree of myocardial insufficiency.

These, then, are some of the more important symptoms of one form of chronic myocarditis—a form, in its earlier stages at least, that may be greatly influenced by judicious advice and medication. I have never observed heart-block in this type of case.

A Case of Chronic Fibroid Myocarditis with Heart-Block

A. L., aged seventy-eight, labourer, admitted to Kingston

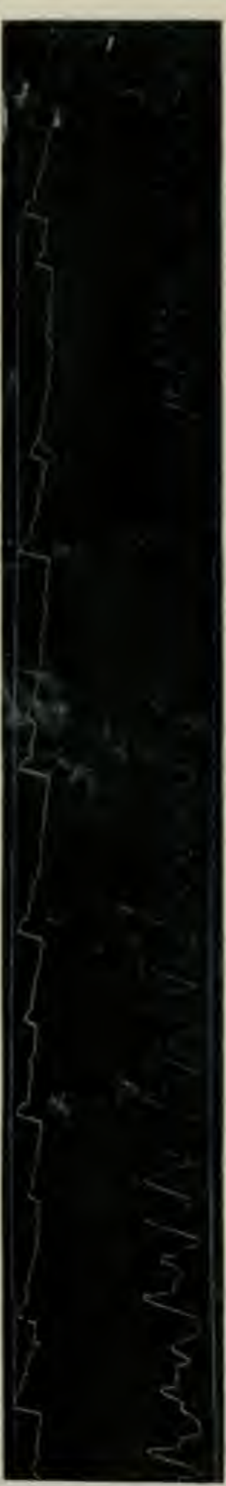
General Hospital, February 3rd, 1911, complaining of weakness and some shortness of breath on exertion. Patient gave a history of rheumatism; had to void urine from one to three times during the night for several years; had used tea and tobacco and probably alcohol to excess; had noticed some œdema of the feet in the evening for several months.

Physical Examination: Patient is fairly nourished, face pale and rather haggard, venules dilated; weight, 164; pupils react to light and accommodation; no marked respiratory distress; no tracheal tug; no enlargement of lymph glands; thorax, barrel-shaped; vocal fremitus not increased; has some cough and a few moist rales are heard low down at the back; urine, normal.

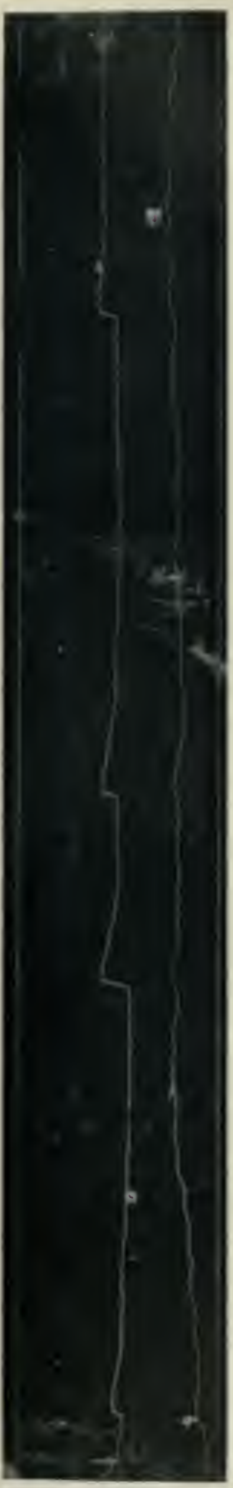
Heart: Feeble impulse in the sixth intercostal space, well outside the nipple line; heart sounds everywhere feeble; a soft systolic murmur is heard at the apex, which is transmitted to the angle of the scapula and not changed perceptibly by movement; radials, very sclerotic; slight œdema of feet; no cyanosis; a simultaneous tracing of jugular and radial shows a rhythm of 4 : 1, the jugular 120, the radial 30.

Just before death, the radial dropped to 12. The radial tracing shows, in addition, in the descending line, a number of minute elevations. According to MacKenzie, these are due to the impact of the left auricle during systole, against either the aortic valves or the root of the aorta. On the morning of March 1st, he complained of considerable precordial distress and was slightly delirious. He was given morphia, gr. $\frac{1}{8}$, which relieved the symtoms and, temporarily at least, improved his condition. His blood pressure was 115, but as his palpable arteries were quite atheromatous, this reading was of little or no clinical value. On March 4th, the nurse reported Cheyne-Stokes respiration during the night. The house physician gave strychnia, gr. $\frac{1}{60}$, hypodermically, for the purpose of stimulating the respiratory centre, but without effect. On March 5th, the pulse was difficult to count. There appeared to be from twenty-eight to thirty beats to the minute, of fair volume, and about three times that number of very small, indistinct beats. The same facts were elicited on ausculation over the mitral area. A jugular-radial tracing showed these semi-beats to be auricular in origin. He was given atropine, gr. $\frac{1}{60}$, hypodermically, thus partially paralyzing the vagi without any effect on the pulse or jugular rate.

It was inferred from the evidence that there was a lesion of the bundle of His, or, in other words, that the heart-block was



I. Simultaneous tracings of the radial and jugular pulses. Upper, radial: lower, jugular. The x's indicate the points at which the radial and jugular beats correspond.



II. Upper, radial; lower, jugular. Radial pulse 12 to minute. Jugular shows fibrillation—taken a few hours before death.

To illustrate Dr. Third's article: "Some Observations on Chronic Myocarditis."

myogenic in origin. A few hours later, the patient being very restless, morphia, gr. $\frac{1}{8}$, was administered hypodermically. Cheyne-Stokes respiration was now very marked. Before the morphia took effect, the pause occupied 38 seconds, the respiration 50 seconds. One hour later, the pause occupied 44 seconds, the respiration 32. As was to be expected, the morphia intensified the Cheyne-Stokes type of respiration. Except for short intervals while he was awake, the Cheyne-Stokes breathing continued until his death, March 12th. The tracings were made during the pause. Diagnosis, chronic myocarditis with myogenic heart-block.

I am indebted to my *confrere*, Dr. W. T. Connell, for the following pathologidal report:

Summary of Autopsy by Dr. W. T. Connell

Summary of Autopsy:—L——, aged seventy-eight; dead fifteen hours; œdema of right leg. One quart serous fluid in right pleural sac. Heart generally enlarged, weight 13 ozs., all chambers moderately dilated and left ventricular wall hypertrophied; heart muscle showed evident fibrous tissue increase more marked towards apex; the aortic cusp of the mitral was thickened and fibrous but not retracted, the thickening spreading into mitral ring and neighbouring septum; moderate patchy, fatty, and calcareous atheroma of aorta throughout course; nodular thickening of first portions both coronaries with some narrowing of lumina. Red, granular kidneys.

In view of clinical history, a block of tissue was removed from septum so as to include the bundle of His. This block was subdivided, numbered, and sectioned so as to follow this bundle. In no place was the bundle completely blocked, though there was throughout its course much increase of fibrous tissue and isolation of the muscle bundles, while just as bundle passes into ventricular septum the fibrous increase was marked and accompanied by calcareous deposit, the auriculo-ventricular bundle being here nearly blocked. Sections of heart muscle elsewhere also show moderate increase of fibrous tissue, this being most evident at apices of ventricles and in left ventricular wall below anterior segments of aortic valves.

Case Reports

MELÆNA

THE literature on hæmorrhages of the new-born is not very plentiful. For this reason I have thought it worth while to bring before you a brief outline of a case which I had under my care in May, 1911, with a few notes on other cases. Previous to this I had seen two cases of gastro-intestinal hæmorrhages in infants, both during my term in the Montreal Maternity Hospital, 1907-1908. Taking first the two cases which occurred in the Montreal Maternity Hospital in 1907-1908:

CASE 1. This was a case of the mother suffering from symptoms of eclampsia, general anasarca, headaches, etc., but with no convulsions. Labour came on spontaneously at term. The forceps were used early in the second stage and the early delivery of the first child followed. The second child, the one which developed the hæmorrhages, was delivered by internal version and extraction by the Swellie-Veir method, with some difficulty in the delivery of an after-coming head. Within twenty-four hours of birth, hæmorrhages began by the mouth, which were quickly followed by severe ones in the bowel of bright red blood. The child was kept warm and given calcium lactate by mouth, but died before twenty-four hours had elapsed. No history of hæmophilia or specific disease could be obtained from the parents.

CASE 2. In this case, also, no history could be obtained of hæmophilia or specific disease. Hæmorrhages began in the same way on the second day of life, and the child rapidly became waxlike and weak, and finally died within twenty-four hours from the onset. The treatment given was quiet, warmth, and calcium lactate internally.

Post mortems were performed at the Royal Victoria Hospital, and, though I am sorry to say that I have not a copy of the report, I was present and remember in each case that there were minute ulcers throughout the mucous membrane of the stomach and the duodenum with a few scattered ones in the lower bowel. Hæmorrhagic spots were found also over the surface of the pericardium and over parts of the liver.

Read before the British Columbia Medical Association, Vancouver, September 5th, 1911.

Case 3. This was a male child, the second in the family, weight 9¼ lbs. It was born May 5th, 1911, and delivery was made with low forceps. There was no difficulty in birth, and no vigorous means of resuscitation were necessary. The mother and father were young adults in good health, and there was no history of hæmophilia. The child was healthy till 9.45 a.m., May 8th, the fourth day of life, when he vomited a large quantity of dark brown fluid, which on careful inspection proved to be blood. The condition of the baby at this time was quite alarming. He lay in his cot breathing quite quietly, with eyes closed and the whole expression one of comfort. The colour of the face was good, as was also that of the mucous membranes.

An examination of the nose and throat did not explain the vomiting nor did the mother's nipples prove to be fissured. Suspecting further hæmorrhages, I ordered the baby to be kept absolutely quiet and warm, the diapers to be left loose under the buttocks so that they could be changed without much disturbance to the child. The motions up to the present being simply meconium, the baby was placed on an artificial feeding of a weak modification of cow's milk, as breast milk was scant and not yet changed from colustrum. At 11 a.m. the same day, the fourth day of life and first of onset of the disease, the child again vomited bright red blood containing clot. At 4 p.m. the same day, there was a bowel movement containing meconium only. At 7 p.m. the bowel movement contained a quantity of blood. At 9 p.m. there was a hæmorrhage from the bowel with both fluid and clot. At 10.30 p.m. a like hæmorrhage followed.

On the fifth day of life and second of illness, at 1 a.m. there was a large hæmorrhage from the bowel and the baby now became very pale, and waxlike, and weak. At 11.30 a.m. there was another large hæmorrhage from the bowel. Up till this the baby was getting gelatin solution, 10 per cent., one teaspoonful every two hours by mouth, and calcium lactate, grs. v., every two or three hours, by mouth. As the baby was in such poor condition and as immediate results were necessary, I gave a subcutaneous saline of about four or five ounces into the thighs, and then decided to inject serum. With this in view I performed venesection on the father and collected the blood direct from a vein of the arm into sterilized test-tubes and then kept these on ice, the ends being plugged with sterile absorbents till the serum separated. At 5.30 p.m. the same day, the second day of illness, the baby had another hæmorrhage (bright red) from the bowel. At 5.45 p.m. there was another smaller hæmorrhage from the bowel. At 8 p.m., 10 c.c. of serum was injected subcutaneously into the abdominal wall. At 10 p.m. there was a slight hæmorrhage from the bowel.

On the third day of illness, at 12.15 a.m., there was a slight hæmorrhage from the bowel with flatus; at 2 a.m., a large hæmorrhage from the bowel with flatus; at 4.20 a.m., a slight hæmorrhage from the bowel with flatus. At 5.30 a.m. a large amount of blood was passed with flatus. The blood was very dark in colour. At 6.30 a.m. the child expelled a great deal of flatus with some blood; at 12.30 noon, flatus without blood, and at 8.30 p.m., flatus and a trace of blood. On the fourth day of illness at 10 p.m. there was a bowel movement containing a slight amount of blood, and on the fifth day of illness, at 1.45 a.m., a very loose movement streaked with blood.

A count of the hæmorrhages shows that before the injection of the serum there had been nine. After its injection six followed, of these two only being of much consequence. Adrenalin was used for a few doses only just before the administration of the serum, and for two doses after. The condition of the baby became alarming previous to the injection of the saline. It dropped from 9¼ lbs. at birth to 7¼ lbs. when next weighed ten days after the onset and five days after the cessation of the hæmorrhages. From the day that the hæmorrhages ceased, an improvement could be seen daily, the baby regaining its birth weight one month from the date of the last hæmorrhage. The colour came back very slowly to the skin, but a distinct improvement was early noticed in the lips and finger nails.

In this case so many therapeutic measures were adopted that it is really hard to say which did the work, but to my mind there was such a distinct improvement following the one injection of serum that although prepared to give another injection the following day, on seeing the baby I did not deem it necessary.

On looking up the literature on the question of hæmorrhages of the new-born, I find the best article is one written by J. Edgar Welch, pathologist of the Lying-In Hospital, New York. In his series, the ætiology of the hæmorrhages was unknown, except that none were due to trauma. Some, he says, were very likely hæmophilia, and others due to infection—staphylococcus, streptococcus. Bleeding occurred during the first week, and usually on the second, third, or fourth day. Bleeding came from the skin, mucous membranes, or serous cavities, hæmaturia, etc. He states that amongst the list of drugs mentioned the favourite are calcium salts, solutions of gelatin, and adrenalin.

In 18 cases reported in the Lying-In Hospital, New York, in which these remedies were used, 17 deaths occurred, demonstrating the high mortality in this disease and the futility of all previous therapeutic measures. With this in mind and the possibility of producing serum sickness by using serum of different species, he decided to try normal, human serum. In this he found an agent that successfully controls hæmorrhages in the new-born. Fresh human serum has been demonstrated to be bactericidal, never to give serum sickness, or cause anaphylaxis in the human subject. On the other hand, it is a perfect form of food, is predigested, and is ready to be taken up and utilized by the tissues and cells of the body. As a proof of its harmlessness he quotes the case of injecting into a normal adult 150 c.c. of serum taken from an eclamptic after her twentieth convulsion, the eclamptic patient dying immediately after. There was no noticeable effect subjectively or objectively. The dose depends upon the urgency of the case. It is advisable to begin with doses of 10 c.c. and repeat three times daily, in the case of moderate bleedings. In severe cases, q. 2 h. and larger doses should be used. He quoted having given in one case 209 c.c. in five days as follows:

64 c.c. in 6 doses the first day.
65 c.c. in 6 doses the second day.
30 c.c. in 3 doses the third day.
22 c.c. in 2 doses the fourth day.
28 c.c. in 3 doses the fifth day.

PATHOLOGY OF MALÆNA. It occurs 1 in 1000. According to Silbermann, death occurs in 56 per cent. Dr. Herman Schoppler reports the following post mortem in two cases of gastro-intestinal hæmorrhages in infants. The stomach contained dark blood and some linear blood extravasations, but no ulceration or excoriation. There was no loss of substance in the intestines, although they contained thin blood. The liver was large, anæmic, and greyish-yellow in colour. The portal vessels showed no peculiar colour. A microscopic examination in the stomach failed to show any defect in the epithelium or any signs of inflammation. In the mucous membrane of intestines, however, there was an abundant round-cell infiltration. The subcutaneous tissue was the site of the hæmorrhage and the blood vessels were distended with clotted blood. There was no abnormal appearances in the liver. In the second case the macroscopic appearance was the same as in the first case. A microscopic examination of the stomach showed no abnormal appearances, but in the intestines the epithelium was found wanting in small areas, and abundant collections of small round cells were everywhere visible, giving the mucous membrane the appearance of inflammatory infiltration.

Vancouver C. F. COVERNTON

Editorial

AN AUSTRALIAN CONTRIBUTOR

THE work of the world always goes better for the presence and voice of the enthusiast, whether it be in religion, in science, or in art. At times we are inclined to abuse the man who voices sentiments that are distant from our own, whether those sentiments be in advance of ours, or apparently so far to one side that we do not recognize that he is going in the same direction as we are; the enthusiast has usually had to bear many hard knocks, and the majority of them have probably been undeserved. In *"Studies in Pulmonary Tuberculosis" by Frederick Guy Griffiths, B.A., M.D., Ch.M., we welcome the voice of the enthusiast, and doubly so that it marks the fact that our sister, Australia, is active in work that appeals greatly to us. Dr. Griffiths is an intense believer in the efficacy of tuberculin, both as a means for diagnosis and a means of cure; and, although some of his readers may not hold his robust faith in its efficacy, it is stimulating to have the case put forward strenuously and dogmatically. If the selection of these terms seems to imply—and such is not the intention—that we think the author goes too far in his claims, we hasten to say that his active optimism is worth far more than the paralyzing scepticism of so many of the profession upon this very point. If the truth lies somewhere between the two, we feel sure that it is far nearer to the position held by Dr. Griffiths than to the ground occupied by the man who folds his hands and says "We cannot tell!"

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*STUDIES IN PULMONARY TUBERCULOSIS: ITS DISSEMINATION, SPECIFIC DIAGNOSIS AND TREATMENT AND SOME POINTS IN ITS PATHOLOGY, BY FREDERICK GUY GRIFFITHS, B.A., M.D., Ch.M., Honorary Pathologist and Honorary Assistant Physician, Royal North Shore Hospital of Sydney, etc. Illustrated with charts and diagrams. London: Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, 1911.

To be precise, we believe that Dr. Griffiths has not laid enough stress upon the possible falsity of a tuberculin reaction and upon the *possible* deleterious effects of tuberculin, and that he lays too much stress upon the direct effect of tuberculin upon processes such as fibrosis, and too little weight upon natural body defences, perhaps we should say upon individual differences of resistance. In Canada, we think that room contamination is a great danger, apart from actual contact, and that registration of cases is absolutely essential for this, if for no other reason. We are faced by a danger, also, that infection in our cattle, widely infected as they are, may be overlooked if too little weight be given to the possibilities of infection from bovine sources.

We admire the precise, accurate descriptions of various methods that have been lately introduced, and the full descriptions and accurate knowledge, possessed by the writer, of the actual state of all the patients whose cases are described; there can be no praise more fitting to bestow upon the writer of this book than to say that if time should prove any of Dr. Griffiths' views to be incorrect, his zeal and his accuracy indicate that he will be the first one to discover it.

DR. R. A. H. MACKEEN

ROBERT ARTHUR HALIBURTON MACKEEN was the youngest son of the late Hon. William Mackeen, of Mabou, who was for many years a member of the executive council of Nova Scotia in the days before confederation. He was the youngest brother of the Hon. David Mackeen of the Canadian senate.

He studied medicine at the Bellevue Hospital Medical College and graduated there in 1880. For nearly thirty years he practised in Glace Bay, and was the leading practitioner in that district. Early in his career he developed a special aptitude for surgery, and from the very nature of his practice he had many opportunities for the exercise of his skill in the treatment of injuries. He was a diligent student of surgery, and made every effort to perfect his knowledge by frequent visits to the chief centres of surgical activity in Canada and the United States, and twelve years ago spent some months in the study of surgery in Edinburgh, and London, and in Germany. At a time when no hospital existed in his neighbourhood, the treatment of his surgical cases reflected the highest credit upon him, but with the establishment of St. Joseph's Hospital in 1904 his surgical work rapidly increased and his reputation for success in all departments of surgery spread widely.

His career is a shining example of what may be done in surgery by a man busy with the cares of a general practice, and alas, also an illustration of the serious demands such work makes upon the worker. Despite his powerful frame the physical fatigue and mental strain were too much. Symptoms of arterio-sclerosis began to appear. The death of his wife, a woman of singular charm and talent, in 1909, was a crushing blow from which he never recovered. In June, 1910, he was very seriously ill, and spent some weeks in the Royal Victoria Hospital in Montreal under the care of his friend Dr. W. F. Hamilton. He recovered to a surprising extent and resumed practice. Early last year he spent some time in England and at Vittel, in France, with some relief to his symptoms. Again he bravely tried to carry on his work at St. Joseph's Hospital. But he broke down completely at the end of November, and from that time was unable to leave his bed. Cardiac and renal complications became more marked, and he suffered greatly from dyspnœa. He faced the inevitable end with unswerving courage and solemn hope. On the day preceding his death he was unusually cheerful and happy, and he passed away quietly, in his sleep, at four o'clock on the morning of January 14th. His family, consisting of five daughters and one son, were at his bedside.

The funeral, which took place on the seventeenth, was unusually impressive and a striking testimony to the regard and affection in which he was held by the community. Many came from a distance, and there were about forty of his professional brethren in the procession. Clergymen of all denominations were present. The interment took place in Sydney.

Dr. Mackeen always took an interest in public affairs, and had been warden of his county for four years, but in recent years the pressing claims of his practice gave no time for aught else. There was something unusually attractive in his personality; he was a strong and lovable spirit. His sincerity, his devotion to duty, his kindly thoughtfulness, endeared him to his patients. He had a great fund of humour, and he had the happy gift of preserving an imperturbable gravity while moving his hearers to merriment.

The *Sydney Post*, in an editorial, says: "He had the satisfaction of being more than once urged by leaders of his profession to remove to larger centres where his work might have been carried on in easier circumstances and would have received larger emoluments. He remained to the end in his chosen surroundings, gaining the confidence of the community and enjoying a family life and friendship of peculiar tenderness and strength."

ONTARIO MEDICAL COUNCIL

THERE has been a lull in the discussion of the affairs of medicine for several months, owing to a disposition on the part of most men to see if the members of the Medical Council were sincere in their intention to reorganize themselves. Evidently there is a disappointment in store for the optimists, as apparently no meeting of the reorganization committee has taken place, and those who profess to know state that there is no real anxiety on the part of the Council to go on with this work. If so, there will be a rude awakening for somebody, as there is plainly no necessity for a body as large as the Medical Council; and if they do not obey what was plainly the mandate of the profession, they will pay the penalty. Already it is stated that the large fee for registration of students and for their examinations is simply intended to provide the essentials for a cheap holiday for the many members. Surely the Council should be anxious to place itself beyond criticism just as soon as possible. It should recognize the fact that it escaped from a most unpleasant predicament last year by yielding to the pressure from all sides. Surely the members will not run the risk of creating another dangerous situation. Let the committee on reorganization do the work it was asked to perform, and let them do it fairly and without recognition of anything but the needs of the profession.

PHYSICIANS OF THE INSANE

IN the profession of medicine there is no labour so arduous as that which falls to the lot of superintendents of asylums for the insane, and to their assistants. The task is exacting, and the continual association with misery makes heavy demands upon the heart as well as upon the mind. This is a condition which no amount of good-will on the part of the public can prevent. They can, however, lighten the labours of these physicians, who serve them so well, by removing from their minds the fear of penury. The certainty of receiving a pension would be a great consolation during long years of service amongst the insane.

Dr. Burgess, the superintendent of the hospital for insane Protestants at Montreal, is rendering the best possible service to the insane themselves by his advocacy that the government should grant a pension to medical officers of long service. There is nothing new in such a proposal. Judges of sessions even in Quebec are entitled to this privilege, and we submit that the claims of physicians to the insane are even greater than theirs. In England and many other countries this practice prevails.

A deputation has waited upon Sir L. Gouin, the premier, who has always shown himself sympathetic towards any good cause. Many important facts were drawn to his attention. Owing to the increased number of patients it was explained that the duties of the physicians are daily becoming more onerous. In Quebec alone the number of insane to be taken care of has increased threefold during the last twenty-five years, and it is rapidly increasing. The salaries received by physicians are inadequate to enable them to make provision for the future of their families, and of themselves if they should be incapacitated. In private practice the earnings of a physician usually increase year by year, whilst in asylum work the remuneration, besides being small, is stationary. Their duties are arduous and tend to shorten life, and there is, in addition, the danger of violence from the patients. The late Drs. Duquette and Vallée may be used as an illustration of this fact. Indeed, Dr. Vallée narrowly escaped death at the hands of an insane patient, and never recovered from the effects of the injury.

The office is the most difficult to fill in the whole civil service, because, apart from administrative requirements, it demands special scientific training, difficult and expensive to acquire. The weighty responsibilities it involves and its protective value to society make it one of the most important of the appointments from the liberal professions in the service of the government.

SUAVITER IN MODO

THE Quebec provincial board of health never errs on the side of severity. For several months it has been known that small-pox was prevalent in the villages and country, and that many municipalities were doing nothing to check the disease. In those places small-pox is regarded as a trifling, or inevitable, condition against which remedial or preventive measures are either unnecessary or unavailing, according to the view which is adopted. Indeed, to be *bien picotte* is considered in some circles of society as an enhancement of manly beauty.

The inspectors have returned from a visit to the infected districts, and the reports which they bring in are alarming. Whilst it is quite true that the type of disease is mild, it is also true that mild cases often give rise to furious epidemics. That occurred in Montreal in 1885, and so far as we are aware, there is no reason, in the absence of precautions, why it should not occur again. These local centres of infection are a menace to the country as a whole.

The inspectors report that in St. Germain de Grantham there were twenty-two houses in which patients were suffering from small-pox. In St. Elphege d'Yamaska the mistress of the school was attending to her duties although she bore recent traces of the disease. In Batiscan the public disregard of precautions went to such lengths that persons suffering from small-pox in a mild form were going about the streets, calling at the post-office, visiting the general stores, and engaging in the ordinary affairs of the community. In the Lake St. John district the conditions are even worse, and inspectors have been dispatched to the scene.

In a communication to the press, Dr. Elzear Pelletier, the secretary of the board, informs us that it has been the practice to refrain from publishing the names of such municipalities as voluntarily come forward with reports of small-pox conditions. He intimates that, in the case of the various centres which have been discovered as having openly defied the public laws and the recommendations of the provincial officers, their names will be given publicity, "so that they may be afforded whatever disadvantages may accrue to them by the publication of conditions prevailing within their borders." Moreover, he adds, it is not unlikely that more serious steps will be taken to impress upon the authorities of such places the gravity of their actions in neglecting to follow out the law.

Dr. Pelletier has in reality, by continual effort, created in the province of Quebec whatever sentiment exists in favour of public health, and he has done it in the face of many difficulties, by persuasion and gentleness. This sentiment is now sufficiently strong to allow him the opportunity of adding example to precept; and he has the power, under recent legislation, to make an example of any municipality which allows itself to become a menace to the community. He has always been *suaviter in modo:* he might now well be *fortiter in re.*

MEDICINE IN ALBERTA

ALBERTA is again proving itself to be a most valuable laboratory for experiments in legislation, and with the courage of youth it does not count the cost of the service which it is rendering. The most recent experiment which it has undertaken is in the field of medicine. On December 20th, assent was obtained to an amendment of the "Medical Profession Act," giving sanction to principles and practices which have been successfully resisted in all other parts of the world.

The medical council is enjoined to admit upon the register the name of any person who can produce a certificate from the registrar of the University of Alberta that he is qualified to practise osteopathy or homœopathy, and the examination of candidates is to be undertaken by the university. It is expressly provided, also, that the approval of the college of physicians and surgeons shall not apply to the subjects in which osteopaths and homœopaths shall be examined.

Section nine is perhaps the most interesting part of the experiment. It provides that any person who has practised osteopathy in Alberta for at least four months previous to the passing of the Act shall be granted a certificate without examination. The reservation, however, is made that such person must have the approval of the American Osteopathic Association.

Apparently in Alberta the practice of medicine is divided into compartments, as the Act specifies that, "if any person registered in respect to one class of practice shall practise in respect to another class he shall upon conviction be fined." We are not sufficiently conversant with the practice of osteopathy to decide what bearing this section will have upon that art; but it would appear that a masseuse who recommended to a patient the use of a glass of mineral water would be transgressing the rules. Similarly, if a homœopath administered a hypodermic injection of morphin he would be practising out of his class; or a physician who attempted to encourage "the flow of the vital juice" might be held to be practising osteopathy. If a case comes into court we shall likely gain some information as to what osteopathy and homœopathy really are.

The regulations of the practice of midwifery are not clear. Apparently midwives may register, but unregistered midwives may exercise their calling in country districts, or in a village or town where there is no resident, registered practitioner. It would seem that an osteopath is considered to be "a practitioner," in which case the privilege of practising midwifery might as well be extended to a piano-tuner as to him.

When next the legislators of Alberta are in the mood for making experiments which have been attempted nowhere else in the civilized world, we would suggest that they abrogate all restrictions upon the practice of medicine, leaving patients to make their own choice, and practitioners to the common law to answer for their conduct. One fact stands out clearly above all legislation, and that is, that a physician of ability and character has nothing to fear, or hope, from the presence or absence of restrictions.

In this number appears a list of members of the Canadian Medical Association. It is extremely difficult to secure absolute accuracy in a list of this nature. Members observing any errors in names or addresses are requested to communicate with the editor, and if the errors are at all numerous a revised list will be published in the next issue.

BULLETIN NO. 228 from the laboratory of the inland revenue department contains a study of maple sugar by Dr. A. McGill, the chief analyst. It deals with the examination of 456 samples. Standards for the judging of maple sugar and maple syrup in Canada were established under section 26 of the "Adulteration Act" on March 22nd last. It was believed that the standards were of such a nature that it would be impossible for a sample of sugar made entirely from maple sap to be adjudged other than genuine. It was believed that even if samples more or less sophisticated might escape detection, it would be impossible to consider genuine sugar as adulterated. Complaint was at once made that sugar might be genuine and yet not comply with the standard. Accordingly, the analyst obtained 456 samples which were undoubtedly genuine, and found upon examination that this complaint was substantiated, as 31 samples of undoubted genuineness failed to reach the legal requirements. Under these conditions it is apparent, as Dr. McGill affirms, that the standard must be rewritten, since there should be no possibility of branding a genuine food product as adulterated.

MESSRS. LONGMANS, GREEN & COMPANY announce the publication of International Medical Monographs of which Dr. Leonard Hill and Dr. William Bullock are the editors. Monographs will be published at short intervals dealing with subjects of exceptional interest and importance, and each part may be obtained separately. Monographs have already been issued upon "The Mechanical Factors of Digestion," "Caisson Disease," "Blood Vessel Surgery," and "Syphilis." Other works will appear shortly upon "Lead Poisoning," "The

Protein Element in Nutrition," "Shock," and "The Carrier Problem in Infectious Diseases."

Applications are invited by the medical faculty of McGill University for the Douglas Medical Research Fellowship, of the value of $1,000, tenable for one year with possibility of reëlection for a second year. The holder of the Fellowship is required to undertake such investigations as shall demand a combination of study in the hospital wards with research in the pathological department of the university. Candidates, who must be graduates of a recognized medical school, are requested to indicate the line of work they propose to undertake, if elected, and to afford evidence of original research already accomplished. Applications should be forwarded to Professor J. G. Adami, McGill University, Montreal, on or before February 15th, 1912.

The quack is not a local manifestation, either in place or in time. He flourishes in far-off Australia as well as in Canada, and no efficient means have yet been devised for checking his vicious activity. From the *Australian Medical Journal* of September 2nd we learn that a committee had been appointed to examine the claims of a notorious cancer curer. It appears that the committee has issued a report recommending that the board of health register the names of all unqualified healers, and that all quacks should publicly notify all cases they are attending. As the *Australian Journal* points out, this measure would merely give rise to new evils. Registration would create a new order of practitioners under shelter of the law, and notification would signify to the patient that his treatment had the sanction of the authorities. The common sense of the matter is, as that journal points out, that in the practice of healing, as in any other calling, fraud should be punished under the provisions of the criminal code, whether it is perpetrated by a qualified or unqualified practitioner.

Book Reviews

CASE HISTORIES IN NEUROLOGY. By E. W. TAYLOR, A.M., M.D. 305 pages, with illustrations; price, $3.00. W. M. Leonard, Publisher, Boston.

Upon a previous occasion, namely, in August, mention was made of "Case Histories in Pediatrics," by Dr. John Lovett Morse, of Boston; and the present volume devoted to "Case Histories in Neurology," by Dr. E. W. Taylor, of Harvard, appears to be devised upon the same plan. Actual cases are cited to illustrate diseases and symptoms; and they are recorded under the usual headings, peripheral, spinal cord, brain diseases, unclassified, and neuroses. These cases are excessively interesting. They are set forth with rare skill, without incidental or extraneous matter, exactly as cases should be recorded. We commend this series to students and to examiners in medicine. No means could better be employed to test a student's knowledge. There are few cases of nervous diseases falling under the attention of a pyhsician, which could not be diagnosed by reference to this book.

PROGRESSIVE MEDICINE. Edited by HOBART AMORY HARE, M.D., assisted by LEIGHTON F. APPLEMAN, M.D., December 1st, 1911. Lea & Febiger, Philadelphia and New York, $6.00 per annum.

The opening article in this volume deals with the diseases of the digestive tract and allied organs, namely, the liver, pancreas, and peritoneum, by R. S. Lavenson. The second article is upon diseases of the kidney, by John Rose Bradford. The third is by Charles W. Bonney, upon genito-urinary diseases. The surgical section is in charge of Joseph C. Bloodgood, who writes upon the surgery of the extremities, shock, anæsthesia, infections, fractures and dislocations, and tumours. A most valuable feature of the volume is a practical therapeutic referendum by H. R. M. Landis, occupying fifty-five pages. The various therapeutic measures are set forth in alphabetical order. Each receives a comprehensive annotation, and the whole may be taken as a just estimate of the place which each of these measures occupies in medicine at the moment.

EMERGENCIES OF GENERAL PRACTICE. By PERCY SARGENT, M.B., B.C., F.R.C.S., Surgeon to Out-patients, St. Thomas's Hospital, and, ALFRED E. RUSSELL, M.D., B.S., F.R.C.P., Physician to Out-patients, St. Thomas's Hospital. New second edition; 454 pages; illustrated; $4.50. London: Oxford Medical Publications; Toronto: D. T. McAinsh & Company.

It seems scarcely proper to include in emergencies of general practice, which can be summarily dealt with, such grave accidents as may require removal of an eye, for example; and yet this book gives in less than thirty lines directions for performing that somewhat difficult operation. A man who knows how to excise an eye does not require these directions; and one who should attempt the operation with only such information as this book affords would be liable to find himself in difficulties of various kinds. The book is really a treatise on medicine and surgery, and so large a subject must receive fragmentary or even misleading treatment in a work of moderate compass Every qualified practitioner is expected to be able to deal with emergencies, though a book might well be written for his instruction; and we would suggest for a title, "Till the Specialist Comes."

DISEASES OF THE EYE AND THEIR TREATMENT. By SIR HENRY R. SWANZY, A.M., M.D., D.Sc., and LOUIS WERNES, M.B., F.R.C.S.I. Tenth edition, with illustrations. H. K. LEWIS, 136 Gower Street, London, W.C., 1912.

This is the first book bearing the date, 1912, which we have had the privilege of seeing, and by a curious chance it is the tenth edition of "Swanzy on the Eye." Men who are now old will remember that one of the earlier editions was much prized in their student days. It has always been a standard text-book and is yet as strong and vigorous as ever. For the first time coloured figures have been introduced, which shows how times are changing. They are beautifully drawn and well printed, save for an error in the legend on plate vii, which the correction by hand makes more obvious. This old friend in spite of its new dress is always welcome.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

HEART SOUNDS AND MURMURS. By E. M. BROCKBANK, M.D. (Vict.), F.R.C.P., illustrated. H. K. Lewis, 136 Gower St., London, W.C., 1911.

MEAT HYGIENE. By RICHARD EDELMANN, PH.D.; translated by J.R. MOHLER, A.M., V.M.D., and ADOLPH EICHHORN, D.V.S.; 152 illustrations and 5 coloured plates. Lea & Febiger, Philadelphia and New York, 1911.

THE PRACTITIONER'S VISITING LIST, 1912. Lea & Febiger, Philadelphia and New York, 1911.

STUDIES IN PULMONARY TUBERCULOSIS. By F. G. GRIFFITHS, B.A., M.D. Baillière, Tindall & Cox, London. Price, 5s. net.

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Res Judicatæ

PRESENT KNOWLEDGE OF DUODENAL ULCER

THE comparative frequency with which this condition is now known to occur has given it an importance that formerly it did not possess, so that it demands our most careful consideration. The position of the practitioner at the present time would seem to be a rather puzzling one, when called upon to decide between the contentions of the more aggressive school of surgeons represented by Moynihan and his followers on the one hand, and those of more conservative clinicians on the other. The brilliant work of Moynihan, coupled with his incisive, even dogmatic, style of exposition, has given his views a wide prevalence. He contends that the diagnosis of duodenal ulcer is a relatively simple matter—may be made with precision in from ninety to ninety-five per cent. of cases —that, as regards the symptomatology, severe recurrent hyperchlorhydria *is* duodenal ulcer; that he never operates for duodenal ulcer without finding it; and that hæmatemesis and melæna are complications and not essential to the diagnosis. The condition is claimed to be almost exclusively surgical. These views have aroused much criticism, and recently Kemp, of Copenhagen, has joined issue with Moynihan. Analysing the individual symptoms Kemp shows that none is characteristic.

1. The chief symptom, "hunger pain," is shown to have been described more correctly by the French as one of the important symptoms in what they call the "*syndrome pylorique,*" met with in ulceration at or near the pylorus. But as to whether the ulcer is proximal or distal to the pyloric orifice "hunger pain" alone is no indication. Ewald considers it to be a symptom merely of hyperchlorhydria, but it is extremely rare without ulceration. Kemp and Harslof give operative findings supporting this opinion. Exceptionally it appears that gall stones or appendix disease may give rise to typical "hunger pain."

2. The constant localization of pain on the right side of the middle line above the umbilicus is in favour of duodenal as against gastric ulcer. Of fifty cases of gastric ulcer the pain was on the right side in only two. Moynihan lays little stress on this point.

3. The periodicity of the pain is said by Kemp to be the most

characteristic symptom, and is much more pronounced than in gastric ulcer. Yet Patterson, of London, and others have met with this periodicity and failed to find any evidence of ulcer. In many cases the ulcer may be latent, until suddenly perforation or hæmorrhage may occur. More often latency is periodic, intervals of complete freedom from symptoms alternating with attacks of pain. The intervals may vary from days to weeks, and are more apt to occur in the summer time.

4. Hæmatemesis and melæna are considered by Moynihan to be complications rather than symptoms of duodenal ulcer, as they occur at a late state of the disease, and should be preventable by timely operation. But they have been shown by Moynihan himself and others to occur also in disease of the appendix, and by the Mayos' statistics, to occur, though rarely, in gall-stone disease. A history of hæmatemesis or melæna, or both, is obtained in about one-third of all cases. But if occult blood is repeatedly examined for, it is found in a much larger proportion. The discovery of occult hæmorrhage is important as it *almost* excludes disease outside the digestive tract, such as cholelithiasis or nephrosithiasis. Thus none of these symptoms is pathognomonic of duodenal ulcer. It is the presence of several of them together that counts. Kemp calls attention to the neglect of one form of objective examination;namely, that of the chemistry of gastric secretions and of gastric motility. He refers to the work of Rubow, which seems to indicate that hypersecretion, either digestive or continuous, is rather characteristic of duodenal ulcer. By digestive hypersecretion he means the presence of an abnormally copious (more than 120 cc.) and acid (total acidity exceeding 80) fluid in the stomach one hour after a test meal. By continuous hypersecretion he understands the constant presence of more than 50 cc. of strongly acid fluid in the fasting stomach. As regards the motor function, Günsberg and Kemp have independently shown that more or less motor insufficiency is common, if not the rule, in duodenal ulcer, although, owing to the frequency of the symptom in gastric ulcer (80 per cent.) it is of little value in diagnosis except to exclude functional dyspepsia or extra-gastric disease. Another motor anomaly common in duodenal ulcer is pylorospasm, which may lead to stagnation of food, severe pain, and attacks of uncontrollable vomiting.

Moynihan's contention as to the ease of diagnosis is refuted by the data of other prominent operators. Of one hundred and forty-one tabulated histories reported by C. Graham from the Mayos' clinic, two-thirds of the cases were fairly diagnosed; 10 per cent.

were called gall stones; 14 per cent. were thought to be either duodenal ulcer or gall stones; in about 9 per cent. the diagnosis was not stated, or they were variously diagnosed as one of three or four different ailments. Again, Saltau Fenwick's statistics are interesting, In one hundred and twelve consecutive cases of hypersecretion (sic) operated on by Patterson and others

Chronic ulcer of the stomach alone existed in	13 cases.
Chronic duodenal ulcer	46 "
Gall stones	12 "
Disease of the appendix	22 "
Gastric and duodenal ulcer co-existed in	3 "
Duodenal ulcer and gall stones	3 "
Gastric ulcer and diseased appendix	3 "
Duodenal ulcer and diseased appendix	5 "
Cancer of the pylorus existed alone in	4 "

Thus, observes Fenwick, it is clear that chronic hypersecretion is not a disease, but merely an expression of an organic lesion of some part of the digestive tract, or of those organs that pour their secretion into it, and while most cases may be accounted for by the presence of gall stones, gastric or duodenal ulcer, or a diseased appendix, he believes that further experience will show that pancreatic calculus and cancer and tubercle in the region of the cæcum can also induce the gastric disorder. Consideration shows that the chief source of diagnostic confusion is gastric ulcer, especially when situated at or near the pylorus. Kemp thus summarizes the chief differential points that indicate duodenal ulcer:

1. It affects chiefly males;
2. The marked periodicity of symptoms;
3. The occurrence of pain or gas or both (Graham) two to four hours after food;
4. The localization of pain to the right of the umbilicus;
5. Repeated melæna or persistent occult hæmorrhage without hæmatemesis;
6. The presence of unusually high degrees of digestive and continuous hypersecretion;
7. Frequent severe attacks of pylorospasm.

Gastric ulcer situated without the pylorus will seldom cause difficulty of diagnosis. Of extra-gastric affections the most likely to simulate duodenal ulcer is cholelithiasis. This is more frequent in females than in males. Of great diagnostic value is manifest or occult intestinal hæmorrhage, which practically never occurs in cholelithiasis. Gastric motor insufficiency, hypersecretion, and pylorospasm are rare in cholelithiasis. Icterus is not decisive, as it is absent in 50 per cent. of cases of cholelithiasis, and may occur in duodenal ulcer (eight times in one hundred and eighteen cases according to Oppenheimer). Disease of the right kidney, and especially nephrolithiasis, is more easily excluded, though the x-rays and catheterism of the ureters may be required. Chronic appendicitis and diseases of the colon may produce periodic attacks of pain, localized in the right hypochondrium or epigastrium, but the characteristic connexion with food is usually absent. Again, though gastric hypersecretion may depend on chronic intestinal disease, retention of the gastric contents and pylorospasm are usually absent. (Kemp, of Copenhagen, in *Zeitschr v. Klin. Med.*)

Two remaining points deserve mention in the direct diagnosis. G. Herschell, of London, has shown that the Cammidge pancreatic reaction is helpful. Robson and Cammidge mention that chronic pancreatitis often follows duodenal ulcer. Pancreatitis unaccompanied by jaundice is most commonly due to the extension of a duodenal catarrh along the pancreatic ducts, which implies a source of irritation in the duodenum. In a case presenting the characteristic pain coming on some time after a meal, the knowledge that such is present would justify us in assuming the presence of a duodenal ulcer. In like manner the absence of the pancreatic reaction would show us that there was no duodenal catarrh, and would incline us to the possibility of the trouble being of a functional nature. Moynihan states that the anamnesis is everything, and the physical examination relatively nothing. The writer has found the combination of two signs of value in an occasional case; namely, slightly increased tension of the right upper rectus and slight exaggeration of the right epigastric reflex. Touching the greatly increased risk of hæmorrhage and perforation in duodenal as compared with gastric ulcer, claimed by some surgical authorities, W. Mayo's statistics (St. Mary's hospital reports) are worthy of note. In one hundred and eighty-eight operations for duodenal ulcer, the indication for operation is perforation in only 5·3 per cent. According to Harslof, perforation occurs in 9 per cent. of all cases of gastric ulcer; and, according to several statistics of necropsies, in as many as 15 per cent. Though hæmorrhage occurs in about 30 per cent. of all cases of duodenal ulcer, it is slightly more frequent in gastric ulcer, and the claim that duodenal hæmorrhage is more fatal than gastric has not been proved. Hence, there appears to be no more justification in operating in every case of duodenal than in every case of gastric ulcer. In both, internal treatment should be the routine method, and operation resorted to only in case of necessity. In both the indications for operation are similar. They include:

1. Stenosis;
2. Chronic hæmorrhage, manifest or occult, which does not yield to internal treatment;
3. Repeated severe attacks of pylorospasm;
4. Where the above complications are absent, failure to obtain a satisfactory result by medical means, or the rapid occurrence of a relapse.

The safest position for the practitioner to-day would appear to be one of advanced conservatism. He must recognize that the so-called nervous dyspepsia and functional secretory disorders of the stomach have, in the great majority of cases, some organic cause as their basis, either in the digestive tract or outside it; that duodenal ulcer is one of the conditions that is always to be considered in the presence of hyperchlorhydria, hypersecretion, or a combination of the two; that the diagnosis, often a comparatively simple matter, may present great difficulties, but, since most of the conditions with which it is likely to be confused also require surgical treatment, operation can be more freely advised and undertaken than if it were otherwise. That functional hyperchlorhydria may finally disappear as a clinical entity is possible, even probable; but, that "severe recurrent hyperchlorhydria" *is* duodenal ulcer, can hardly be conceded; that it may ultimately result in duodenal ulcer seems very likely. That its discovery should necessarily suggest prompt surgical interference, except in the presence of such definite indications as have been mentioned, would drive both the public and the profession to a *non-possumus*. Thus the contentions of Moynihan, in particular, seem to be too sweeping, and neither in diagnosis, prognosis, or treatment are we, as yet, in as assured a position as they would suggest.

Whilst freely acknowledging the debt which clinical medicine owes to Moynihan and his surgical *confreres* in the condition under discussion, it seems to the writer that their dicta are too sweeping; and that neither as regards diagnosis, prognosis, or treatment are we, as yet, in quite so assured a position as these would suggest.

Halifax W. Birt

Men and Books

BY SIR WILLIAM OSLER

IV. JEAN ASTRUC AND THE HIGHER CRITICISM. It is strange how the memory of a man may float to posterity on what he would have himself regarded as the most trifling of his works. Ask in succession a score of doctors, "Who was Astruc?" and the expression aroused indicates that at least in our profession he is "clean forgotten as the dead man out of mind"; and yet librarians and dealers in second-hand books know only too well what a prolific writer he was in the first half of the eighteenth century. But ask any theologian, any man interested in the history of the Bible, the same question, and his face at once brightens,—or darkens,—as he replies, "Oh, Jean Astruc, he was the father of modern biblical criticism." And so it is that the man whom we have forgotten, who cut such a figure in the profession at Montpelier and Paris, the enumeration of whose tomes extends through three pages in the "Biographie Médicale," is remembered to-day by a small octavo volume, published anonymously in Brussels, 1753, with the title, "Conjectures sur les Memoires Originaux dont il paroit que Moyse s'est servi pour composer le Liver de la Genese. Avec des Remarques, qui appuient ou qui éclaircissent ces Conjectures."

Interested in Astruc for some years, having had occasion to refer to his splendid work on the history of syphilis and to his history of the Montpelier faculty, and incidentally knowing his position as the founder of the criticism of the Pentateuch, I had long tried to get the above named volume, which I had never seen advertised in any catalogue. It turned up the other day at Sotherby's in the Huth collection. I sent a bid to Quaritch with the admonition "not to lose it"; and as the book is of great rarity I expected to pay a reasonably high price; but, illustrating the hazard of the auction room, no one seemed to know of it and it fell to me for a few shillings.

The story of Astruc's medical life is fully given in Bayle's "Biographie Médicale." His position in modern theology may be gleaned from an eight page article in the recent "Real Encyklopädie für Protestantische Theologie." In Genkel's "Encyklopädie" Baentsch says, "from the appearance of this book dates the fruitful criticism of the Pentateuch. That in the following century its problems have been solved is owing to Astruc, the significance of whose work is assured for all time. The year 1753 in which the book appeared is a milestone in the history of the science of the Old Testament."

Though published in 1753, it was composed some time previously, but the author hesitated to publish lest "les pretendus esprits forts" should regard it as lowering the authority of the Pentateuch; but a learned and religious friend overcame his scruples, urging that the arrangement of Genesis in parallel columns according to its sources would be no greater change than was its division into chapters and verses.

Of the two ways by which Moses could have had his information, oral tradition, "de bouche en bouche," or by written documents which had been handed down, the first was regarded as most probable; but in spite of the fewness of lives, owing to the longevity before the Flood, which lent weight to this view, Astruc believed there were insuperable objections to it. A study of the documents forced the conclusion that Moses had access to many ancient documents describing the world since the creation, coming from different sources and varying in detail. He patched them together one after another, thus forming the book of Genesis as we have it. Only in this way could the repetitions and contradictions be explained. But Astruc's notable discovery was the recognition that in Genesis there are two separate accounts of the Creation and of the early days of the world, the one extending as far as verse 3 of Chapter II, in which the Creator is spoken of as Elohim, the other extending from verse 4 of Chapter II to the end of Chapter IV, in which the Creator is called Jehovah. These accounts differ in important details, particularly in the fact that in the Javistic account no mention is made of the sin of Adam, which plays so important a rôle in Pauline Christianity. Astruc recognized other sources, and prints in parallel columns under A, B, C, D, the four most important, which he had worked out as far as to the end of Chapter II of the Book of Exodus.

The work is a small octavo volume, extending to 525 pages, fully one-half of which is taken up with a critical consideration of his views. Small wonder that in 1753 the distinguished physician to the king, and professor in the Paris faculty, published such a work anonymously, and in Brussels.

V. TWO FRENCHMEN ON LAUGHTER. Like song that sweetens toil, laughter brightens the road of life, and to be born with a sense of the comic, is a precious heritage. So much do we differ in the possession of this faculty, that a twentieth century explanation would seek for differences in quantity or quality of some internal secretion which stimulates the phrenic centres. Or one may prefer the view of Aristotle, who describes the diaphragm (phrenes) as a membrane which when overheated by tickling, so "disturbs mental action as to occasion movements that are independent of the will." In any case, the close connexion believed to exist between the mind and the diaphragm is still suggested to us by the anatomical term "phrenic nerves." We owe to Aristotle the first study of the physiology of laughter, and the recognition of it as a faculty peculiar to man.

Having always held with that philosopher who regarded a day wasted in which he had not had a good laugh, I eagerly read Bergson's "Laughter, an Essay on the Meaning of the Comic" (Macmillan & Co). What a delightful gift to be able to make smooth the rough places of psychology! With not a dry page, full of thought so clearly expressed and so happily illustrated, and not too long, the book is a model of clear presentation. And yet, to take the end first, philosopher like, he reaches a lame and impotent conclusion at which my Democritean soul rebels; for the final comparison of laughter is with the froth of which a child picks up on a sandy beach a handful, sparkling like gaiety itself, but to the taste the substance scanty and the after taste bitter!

Indifference, absence of feeling, Bergson says, is the natural environment of laughter, which always has a social signification. The trivial mishap that raises a laugh is associated with a mechanical inelasticity—a lack, through failure of mind or of muscle, of adaptability, and the living pliability of a human being. The eccentric in action, at whom we laugh, lacks in character that tension and elasticity which social life brings into play, and upon which its success depends. "The rigidity is the comic and laughter is its corrective." And it is the same with gestures, attitudes and movements of the body, which are comic "in exact proportion as the body reminds us of a machine." So too, the ludicrous in words comes out when an absent idea is fitted into a well-established phrase, as when a lazy lout says, "I don't like working between meals," which has nothing amusing in itself, but only in connexion with the commonplace phrase, "one should not eat between meals." Protecting itself by laughter, society demands that each member shall be attentive to his social surroundings—he must fit himself to the environment. A comic in character is one who "automatically goes about his own way without troubling to get himself in touch with the rest of his fellows, and it is by laughter we reprove his absent-mindedness and waken him out of his dreams." These hurriedly noted points, taken almost at random, may serve to indicate the rich treat in store for any one who wishes to follow the workings of one of the ablest minds of our generation. The title suggests *Punch* or *Life* in the hands of a vivisector, but instead we find humanity in the retort of a chemist of the soul, and the analysis is presented in formulæ of easy comprehension by the plain man.

How scanty the literature on laughter is shown by a glance at the index catalogue of the Surgeon-General's Library. Excluding a few theses and, in series II, reference to papers on spasmodic and uncontrollable laughter, there is mention of three or four monographs, one of which is the only elaborate treatise ever written on the subject—"Traité du Ris, par M. Laur. Joubert, Paris, 1579"—a work noted by Brunet as "recherché à cause du Dialogue sur la Cacographie." Such a contrast to Bergson! We are in another world, with other thoughts, strange terms, and an anatomy and physiology still dominated by Galen. A treatise weighty with authorities, and interspersed with illustrations drawn from Hebrew, Arabic, Greek, and Latin authors, it has, as Brunet remarks, a curious value, apart from the subject-matter, as Joubert was one of the earliest advocates of phonetic spelling, in which style the work is printed, and there is an appendix, "Dialogue sur la Cacographie Françaize." Laughter is discussed in three sections, in the first of which the material is analyzed, and it is interesting to find the same basic elements as given by Bergson, absence of feeling and some mishap or unseemliness—"laideur et faute de pitié"—as when an old fellow plays in the street like a child, or when a gaily dressed beau tumbles in the mud. There are many shrewd comments on the comic in words and in situations. He has great difficulty in placing the risible faculty, but after a long disquisition on the brain and mind it is finally localized in the heart itself. The mind first perceives the ridiculous and it is communicated at once to the heart by the nerves, as by vessels,—"the swift thought," in Shelley's phrase, "winging itself to laughter." The intimate relation of the diaphragm with the heart explains why this structure is the organ of laughter, and one reason why man alone among animals possesses this faculty is the wide extent of the attachment of the human pericardium to the diaphragm.

Various chapters treat of the movements of the face and mouth, the scintillation of the eyes, the tears, the redness of the face, the shaking of the shoulders and of the body, the pain in the abdomen and the loss of sphincter control. In the second book he considers the definitions given by authors, and the different species of laughter, and the reasons why men laugh when the diaphragm is wounded. His own definition may be quoted, and it illustrates the phonetic spelling. "Le Ris et un mouvement, fait de l'esprit epandu, et inegale agitacion du cœur qui epanit la bouche ou les laivres, secoüant le diaphragme et les parties pectirales, avec impetuosité et son autrerompu par lequel et exprimée une affeccion de chose laide, indigne de pitié." Whether man is the only creature which laughs, on the men who have neither wept nor laughed, on the influence of the spleen, why one melancholic laughs and another cries, whether a baby smiles before the fortieth day, why great laughers grow fat, on those who have died laughing—are among the subjects considered in Book III.

Joubert, who lived in the palmy days of the Montpelier school, and succeeded his old teacher, the famous Rondelet, wrote many works, among which the most celebrated were the treatises on gun-shot wounds and on vulgar errors. From the latter it is not unlikely Sir Thomas Browne had the suggestion for his work on the same subject.

I cavilled at Bergson's conclusion,—that like sea-froth the substance of laughter is scanty and the after taste bitter. It is not always so. Joubert is right. There is a form that springs from the heart, heard every day in the merry voice of childhood, the expression of a laughter-loving spirit that defies analysis by the philosopher, which has nothing rigid or mechanical in it, and is totally without social significance. Bubbling spontaneously from the artless heart of child or man, without egoism and full of feeling, laughter is the music of life. After his magical survey of the world in the "Anatomy of Melancholy," Burton could not well decide, *fleat Heraclitus an rideat Democritus*, whether to weep with the one or laugh with the other, and at the end of the day this is often the mental attitude of the doctor; but once with ears attuned to the music of which I speak, he is ever on the side of the great Abderite, and there is the happy possibility that, like Lionel in, I think, one of Shelley's poems, he may keep himself young with laughter.

Retrospect of Medicine

AURICULAR FIBRILLATION. THE SCHORSTEIN LECTURES. BY JAMES MACKENZIE, *Brit. Med. Journ.*, 1911, II, 869.

THE discovery of auricular fibrillation of the heart is the most important yet made in the domain of functional pathology. While the symptoms due directly to the fibrillation, or due to the heart failure induced by it, form a definite clinical entity, few physicians are aware of its existence. About 60 or 70 per cent. of all serious cases of failure of the heart are due to it; and in its recognition we have a sure foundation for diagnosis, prognosis, and rational treatment: "The most common evidence of the condition is serious irregularity of a very disorderly kind." This form of irregularity is seen most frequently in senile hearts and in those due to rheumatic infections. It is seen also in most cases of dropsy and dyspnœa with irregular pulse. While we realize that its recognition is of the greatest importance clinically, we must remember that the discovery of auricular fibrillation is due to the correlation of clinical observation, graphic records, and the results of experimental research. This observation has reached such a point that no longer are these exact methods necessary for its detection. By polygraphic records we have information of the action of two or more of the chambers of the heart, and in one group of cases it is to be noted that the "a" wave—that caused by the auricular contraction—is absent. From the knowledge gained at autopsy that the auricles in such cases were generally hypertrophied (and therefore must have been contracting), the author came to the conclusion that the auricle and ventricle contracted simultaneously, and in response to a stimulus from the auriculo-ventricular node. This he designated nodal rhythm. But while Cushny was the first to suggest that the disorderly, incoherent contraction of the various muscle fibres, that we now call auricular fibrillation, might be a clinical factor of importance, it remained for Lewis with the electro-cardiogram to show that the cause of the disappearance of the "a" wave and so the onset of the disorderly irregularity, was actually auricular fibrillation. When an auricle fibrillates it remains in diastole, but close inspection shows numerous undulatory contractions that accomplish nothing. Should this fibrillation be carried over to the ventricle, the circulation ceases at once. Clinically it may be produced by malnutrition of the heart, by digitalis in certain circumstances, by infectious diseases, by effort. In the hearts examined there has been an increase of fibrous tissue in the walls of the auricle and ventricle, though Draper (*Heart*, 1911, III, 13) has described a case where this firosis was limited to the sino-auricular node. In the majority of cases, once instituted the fibrillation persists till death, perhaps for ten years or more, but many cases of paroxysmal tachycardia owe the onset to numerous attacks of fibrillation lasting only a few moments.

Normally the ventricle recives its impulse to contract from the sino-auricular node through the auricle. When the latter is fibrillating, the ventricle receives many disorderly impulses and the rate increases, the heart becomes irregular, and in the great majority of cases the heart increases in size. Naturally the heart becomes unequal to the task before it; then dyspnœa, palpitation, œdema, cyanosis, and enlargement of the liver rapidly develop in proportion to the severity of the symptoms, and to the cause. This is only to be expected when one remembers that the auricle normally regulates the flow of blood to the ventricle and stimulates it to regular, efficient contractions.

While not confined to cases of auricular fibrillation, it is in this series of patients that digitalis accomplishes the most good. With rare exceptions all cases, where the rate was slowed, were of auricular fibrillation. For example, cases of mitral stenosis with fibrillation were remarkably slowed, whilst the drug had little effect upon cases that, having the same pulse rate, showed no fibrillation. When digitalis itself produces the fibrillation the rate is very much slowed.

The patient is most frequently aware of the onset of the fibrillation by the fluttering sensation in the chest, but this sensation differs from that experienced in paroxysmal tachycardia, in that in the fibrillation there is a frequent occurrence of larger beats. Most readily the observer can recognize fibrillation by the character of the pulse, which has been described as disorderly irregular. The irregularity has no distinctive character, such as is found in the irregularity of the young due to respiratory changes, or in the extrasystolic type, where the normal rate is interrupted by extra systoles or where there is an extra systole following each beat.

In cases of mitral stenosis with a typical presystolic murmur and a diastolic murmur due to the obstruction of the stream of blood at the end of ventricular systole, the onset of fibrillation will be characterized by the disappearance of the presystolic murmur, but not of the diastolic. For the diastolic is due to an actual narrowing of the orifice and the presystolic to the auricular contraction, and when the auricular contraction disappears, as it must in fibrillation, it is perfectly plain that the murmur resulting therefrom will disappear also. The pulse may in such cases, under the action of digitalis, be slow and even regular, but the presence of the diastolic with the absence of the presystolic is almost pathognomic of fibrillation in mitral stenosis.

The symptoms of heart failure are those of failure in general, and, while generally slow in onset, may occur within a few hours after the fibrillation is established. Angina pectoris has not so far been observed. The prognosis must be made upon the effect the ensuing symptoms of heart failure has on the individual. It must be remembered that fibrillation is a sign of disease of the musculature; factors influencing the prognosis are the individual's ability to so reduce his daily life's work that he may be able to live within the limits of his heart, the duration of symptoms, the character of the murmurs in mitral stenosis, the degree of dilatation, and the pulse rate.

There is probably no type of heart disease in which digitalis has so much effect as here. The heart is bound to fail sooner or later if the ventricular rate is over ninety or so, whilst the failure will be much more rapid if the rate is one hundred and twenty or above. Digitalis should be given till the therapeutic effect is obtained, then discontinue for a few days, and resume if the rate rises in such small doses that the rate will be under seventy, or even fifty, if the patient feels better then. When he is up and about, if the rate goes above ninety or even eighty, it is better to have him under the digitalis influence. He will quickly learn the benefit that he is deriving from the drug, then the administration can be left in his hands. MacKenzie has found no particular preparation of outstanding benefit. The tincture, if given in doses of fifteen to twenty minims up to a drachm a day, and continued till there is marked slowing of the pulse or digestive disturbance, is very good. When this therapeutic effect is obtained, the drug is stopped for a few days, then resumed in half doses if the rate shows signs of increasing. In very urgent cases strophanthin intravenously may be of advantage.

Recent Papers on Coma, Especially Diabetic Coma

It has been known for many years that coma in diabetes occurred in a definite time relationship with changes in the output of large amounts of organic acids in the urine. Lately several observers, mostly French, have studied that condition from an experimental side with very interesting results. Labbe and Trolle (*Presse Med.*, 1911, XIX, 284) after showing that the various mineral acids either did not produce coma, or killed too quickly to permit of accurate observation, produced coma by the injection of propionic, lactic, butyric, and beta-oxybutyric acids. Part of the toxicity is due in each case to the acid content, and part to the specific chemical constitution of the acid; and it is noteworthy that the acids containing the acohol radicle are less toxic than those without. The first toxicity (that of the acid) can be inhibited by the free administration of alkalies, among which sodium bicarbonate is the preferable. If three hundred and seventy-five grains of soda butyrate is a lethal dose, that of the acid itself is about ninety. Alcohol should also be freely given, because of the fact before stated that the acids with it in their constitution are less toxic than those without. Not only do Sicard and Salin (*Bull. et Mem. Soc. Med. D. Hop de Paris*, 1911, XXXVIII, 854), advocate the use of the bicarbonate in coma, but also in pruritus. But remembering that in coma it may be as imperative to avoid raising the blood pressure by the administration of too large quantities of fluid, they advise that the solution be made much more concentrated, as high as 9 or 10 per cent. instead of 3 per cent. This solution is given intravenously in amounts up to 250 c.c., and, on account of it being so caustic, care must be exercised that none gets into the tissues. Balint (*Berlin. klin. Woch.* 1911, XLVIII, 1580) recommends giving sugar solution per rectum, because not only is sugar better utilized in the portal than in the general circulation, but also because of the well-known anti-ketone properties of the sugar when so absorbed.

Porges (*Wien klin. Woch.* 1911, XXIV, 1147) considers that acidosis is much more common than supposed, and that the intoxication may be due to over accumulation of acids, to a deficiency of alkalies, or to an insufficient output of acids. Increased breathing, whether in the rate or in the amount of breath taken in at each breath, is an invariable sign of acidosis. This is because the respiratory centre is very sensitive to acids and the increased breathing is an effort to relieve the too acid content of the blood. The absence of increased breathing is sufficient to eliminate acidosis (whether diabetic or otherwise) as a cause of coma, where no history is to be obtained. Labbe, at the meeting of the French Internists (*Jour. Am., M.A.*, 1911, LVII, 1849) notes that, whereas in the normal individual one hundred and forty grains of soda are sufficient to render the urine alkaline, in the diabetic threatened with acidosis very much larger quantities are necessary, and that although the detection of beta-oxybutyric acid is the important feature no bedside test has so far been described. The only reliable tests so far are for acetone and diacetic acid. The clinical signs are often passed by unperceived owing to their want of completeness. Many cases terminate fatally without the fruity odour to the breath described by the old clinicians. He, too, strongly advocated the rigorous employment of sodabicarbonate intravenously giving, as much as twenty-five grms. or one ounce.

ISOHÆMOLYSINS AND ISOAGGLUTININS AND THEIR RELATIONSHIP TO BLOOD TRANSFUSION

THE value of blood transfusion as a method of treatment is still very problematical. This method, however, should, in view of our recent knowledge of the subject of isohæmolysis and isoagglutination, be more carefully studied before being cast aside.

In 1892 Maragliano showed that the blood serum of certain patients was capable of hæmolysing the corpuscles of certain other patients when both serum and corpuscles were mixed *in vitro*. Later, Landsteiner and Shattock, working independently, found that the serum of one patient agglutinated the corpuscles of certain other patients. These substances, present in sera which are capable of hæmolysing or agglutinating the corpuscles of the same species, have been called isohæmolysins and isoagglutinins in contradistinction to the heterohæmolysins and heteroagglutinins present in the sera of certain animals and active against the corpuscles of certain other animals of a different species.

The first careful study of the isoagglutinins was made by Landsteiner. He showed that their occurrence in different sera followed a definite law and that this occurrence was of no pathological significance. In a later investigation of the isohæmolysins, he came to a similar conclusion.

In America our interest in the subject of isohæmolysis was awakened a few years ago by the work of Crile on blood transfusion and his studies on the occurrence of isohæmolysins in patients suffering from carcinoma and tuberculosis. As pointed out by Moss, the large percentage of sera found by Crile showing isohæmolysis was due to his examination of too small a number of sera and corpuscles at one time. Crile found isohæmolysins present in 82-92 per cent. of cases of carcinoma and tuberculosis, and ascribed to this definite diagnostic significance.

From investigations on a rather large number of healthy and diseased patients, Moss and more recently Grafe and Graham, have shown that the occurrence of isohæmolysins is of no diagnostic importance, thus confirming the earlier work of Landsteiner. Further, v. Dungern and Hirschfeld have shown that isoagglutinin characteristics of a blood are transmitted from parents to their children according to the Mendelian law of heredity. These facts, bearing in mind the very close relationship between isoaggalutinins and isohæmolysins, are therefore conclusive evidence that no diagnostic importance can be attributed to the finding of isohæmolysins or isoagglutinins in a patient's serum.

Serological studies have demonstrated that there are two isohæmolysins and two isoagglutinins, and that they only react with suitable receptors (using the terminology of Ehrlich) in the red blood corpuscles. To simplify matters these isohæmolysins and isoagglutinins have been called α and β and their suitable corpuscular receptors A and B, i.e., a serum containing the isohæmolysin α only hæmolyses corpuscles containing the receptor A. Grafe and Graham have shown in their investigations on isohæmolysis that all mathematical combinations of the two substances α and β in the serum with their respective corpuscles are possible, but autohæmolysins and autoagglutinins, i.e., when the substance in the serum hæmolyses or agglutinates its own corpuscles, are extremely rare. These authors found, further, that the serum obtained from blood, the corpuscles of which possessed receptors A or B, or both, to which it was not hæmolytic, was capable, when mixed with sera which hæmolysed these corpuscles, of preventing this hæmolysis, i.e., the serum possessed antihæmolysins. Although all these experiments were performed *in vitro* it is reasonable to suppose that the same process would occur *in vivo.* It is therefore probable that isohæmolysins are of little importance as a disturbing factor in the transfusion of blood.

The untoward symptoms following transfusion in certain cases are probably due to some other factor than isohæmolysis. According to recent investigations of Ottenberg, these symptoms are apparently caused by intravascular agglutination resulting from the interagglutination of the patient's blood with the donor's. He also pointed out that the inconsistency between the very sharp test-tube agglutination and the frequent absence of symptoms following the transfusion of an agglutinable blood was dependent on the quantitative relations between agglutinin and agglutinable corpuscles and non-agglutinable corpuscles. He found that when an excess of corpuscles having the cell receptor A were mixed with a serum having the agglutinin α all the agglutinin was absorbed but no agglutination occurred. This fact therefore explains why untoward symptoms follow transfusion when the patient's serum contains agglutinin for the donor's corpuscles and not when the donor's serum contains agglutinin for the patient's corpuscles. He found also that the presence of a large number of non-agglutinable corpuscles mixed with agglutinable corpuscles and their agglutinin tended to make the clumps of cells found microscopic rather than macroscopic in size. This observation shows how the result of a test-tube experiment of the donor's and patient's blood by not taking into consideration the quantitative relations of the agglutinin and agglutinable and non-agglutinable cells might diagnose a blood as unsuitable for transfusion when the actual transfusion might produce no untoward symptoms. It is of particular interest and value to know that Ottenberg confirmed these experimental observations by the examination of cases which were transfused.

In attempting transfusion, therefore, a suitable donor must be found. This can only be done by examining *in vitro* the blood of the patient and a number of possible candidates as donors. The most suitable blood as donor is one which possesses the same agglutinin characteristics as the patient. This occurs most frequently between parents and children, as was shown by the work of v. Dungern and Hirschfeld. When such a donor is not obtainable, one should be chosen in which the donor's serum contains agglutinin for the patient's corpuscles, because one in which the patient's serum contains agglutinin for the donor's corpuscles would cause intravascular agglutination on transfusion, and, besides producing dangerous symptoms, would probably destroy any therapeutic value the transfused cells might have for the patient. Unless such precautions are taken, previous to transfusion, it is impossible to study satisfactorily the therapeutic value of transfusion.

The following articles contain some of the more important facts on the subject of isohæmolysis and isoagglutination:

Maragliano—*Berl. Klin. Woch.*, No. 31, 1892.
Ascoli—*Munch. Med. Woch.*, No. 31, 1901.
Landsteiner—*Wein. Klin. Woch.*, No. 46, 1901.
Landsteiner & Leiner—*Cent. f. Bact.* Vol. xxxviii, 1905.
Moss—*Johns Hopkins Hosp. Bull.*, Vol. xxi, 1910.
v. Dungern and Hirschfeld—*Zeit. f. Immunitatsforschung*, Vol. iv and Vol. vi, 1910.
Ottenberg—*Jour. Exp. Med.*, Vol. xiii, No. 4, 1911.
Grafe and Graham—*Munch. Med. Woch.*, Nos. 43 and 44, 1911.

Retrospect of Laryngology

BRONCHOSCOPY AND ŒSOPHAGOSCOPY. *The Laryngoscope*, St. Louis, September, 1911.

AT the third international laryngo-rhinological congress in Berlin, August, 1911, bronchoscopy and œsophagoscopy were made the subjects of a symposium. Papers by Professor Killian of Berlin, Docent Otto Kahler of Vienna, and Dr. Jackson of Pittsburg, were presented as an introduction to the discussion.

Prof. Killian discussed the advance which has been made in bronchoscopy and the spread of its use, as indicated by the publications which have appeared on this subject. He pointed out that the work represents an important advance, not only in laryngology, but in the entire medical field.

Direct examination of the upper respiratory tract was first developed by Kirstein in 1895, and by Killian in 1896. To the latter really belongs the credit of developing the technique and demonstrating its practical uses. Previous to Killian's work, direct examination of the œsophagus had been in use to some extent, but this work also received a great impetus from the improved instruments and added interest which was aroused. To Killian's former assistants, v. Eiken and Brunings, are due considerable credit, especially to the latter for numerous modifications and improvements in the instruments and technique.

Kahler, of Vienna, in a discussion of bronchoscopy, speaks first of the examination of the larynx by the direct method, and points out that this method has still to receive the full recognition to which it is entitled. He quotes Kirstein who wrote, in 1895: "The new method now enters into competition with the old and its purpose is not to supplant the old, but to supplement it."

The direct method is practically indispensable in the examination of the larynx in infants, but is not by any means essential in adults, where the indirect method is usually quite satisfactory for diagnosis and much less unpleasant. In an adult who does not stand the indirect examination well, the direct method is rarely satisfactory. This must be borne in mind, as it is not a fair test of the method to apply it only to cases where indirect examination has failed, which implies frequently that the patient will not tolerate manipulation of any kind in the mouth.

While an absolute indication for the direct method is rare in the adult, an absolute contra-indication is just as rare. Certain patients tolerate it badly, a relative contra-indication. It is to be avoided where there is disease at the base of the tongue and dangerous where there is advanced stenosis of the larynx. In these cases even anæsthesia of the larynx is contra-indicated because of the danger of suffocation; if examination be undertaken, preparation for a rapid tracheotomy must be made.

In the new-born, with congenital stridor, autoscopy, or direct examination of the larynx, has explained many cases. In some cases a thyroid and thymus gland has produced tracheal compression, in others it has been found that the soft parts above the cricoid cartilage are drawn downward and forward into the larynx, causing obstruction. Papilloma of the larynx in children is now best treated by this method, which enables the operator in most cases to avoid tracheotomy.

As regards its special use in adults, the direct method is of great value for the accurate determination of the extent of malignant tumours, which is important in deciding what type of operation should be advised. It is also very useful for obtaining sections for microscopic examination. Operations on the larynx by the natural route with narcosis have been made possible by autoscopy. By this method clear vision and the control of hæmorrhage are made possible.

In discussing the examination of the trachea and bronchi he points out that this method has been specially useful in the diagnosis and treatment of *foreign bodies.* In only 7 per cent. of the cases thus far published was it possible to locate the foreign body bronchoscopically, perhaps owing to the faulty technique and unsatisfactory instruments. In the last two years there were only two of 291 cases in which the foreign body could not be located. In 1905 there was 11·5 per cent. of cases reported with faulty diagnosis. He points out that the other methods, especially the *x*-ray, are not to be forgotten.

The results of treatment of foreign bodies in the upper air passages were, prior to the use of this method, very unsatisfactory. Tuffier, in 1897, reported eleven pneumotomies, in ten of which the foreign body was not found; in four cases the operation was fatal. Another observer, in 1903, reporting fourteen cases, with only two successful results. It is not surprising, therefore, that expectant treatment for these cases was advised.

Statistics show that spontaneous expulsion is quite infrequent. Of a series of 1,064 cases, there were only 218, or 20·5 per cent. The mortality of these aspirated foreign body cases was formerly very heavy; one observer records 52 per cent. of 770 cases where no treatment was undertaken. This percentage would be increased if there be added the many patients who died of lung complications caused by unrecognized foreign bodies. The mortality was reduced somewhat by the discovery of the laryngoscope and better treatment of foreign bodies in the larynx. The best series of this period, however, shows a mortality of 30 per cent.

The introduction of bronchoscopy has produced a marked improvement, but the method still lacks the universal recognition which it deserves. Prior to 1896 there were but five cases reported treated by this method; in 1900, 19; in 1904, 36; in 1905, 137; in 1907, 165; in 1909, 304. Kahler has collected in the past two years 291 cases, making a total of 596, and points out that there are probably a number of other cases where foreign bodies were extracted, but not considered worthy of publication. Of 304 cases collected by v. Eiken, forty (13·1 per cent.) terminated fatally, and in the last two years of Kahler's 291 cases there were only twenty-seven fatalities (9·6 per cent.), a very marked improvement over previous methods. The greatest number of deaths occur from lung complications, and this mortality could be lowered if operation were undertaken early.

Of the former series, in 34 cases (11 per cent.) there was failure to remove the foreign body; of the latter, 13 cases (4·5 per cent.), showed a striking improvement in the technic and instruments in the last two years.

The comparative use of upper and lower bronchoscopy has undergone a marked change with the improvement of technique. Lower bronchoscopy, that is to say, examination through a tracheotomy wound, is now rarely used unless there be some special indication, such as severe laryngeal stenosis, or where an attempt by the upper method through the mouth has failed.

The remainder of the paper deals with the various clinical conditions which have been observed and treated, such as anomalies, chronic bronchitis, and bronchiectasis. Several cases of gumma in the bronchi were noted in patients under treatment for chronic bronchitis. The importance of this observation is, of course, evident. Primary tumours were also observed and treated.

Dr. Jackson's paper discussed certain features of œsophagoscopy and gastroscopy. He prefers general anæsthesia, where any operative work or diagnosis of spastic conditions are to be undertaken; in such cases what is required is relaxation rather than anæsthesia. He points out that the chief danger of the method lies in lack of skill and experience on the part of the operator. The principle of his method of gastroscopy depends on the fact that the upper end of the empty stomach hangs as a tube from the diaphragm and a large portion of its surface can be explored through a straight tube. He increases the area which can be examined by forcing the diaphragm laterally in either direction. He considers that this method can be of considerable aid to the abdominal surgeon by reporting to him the interior appearance of various areas of the stomach wall which, during laparotomy, can be placed before the mouth of the tube.

Obituary

Dr. C. Caw died at his home in Parkhill, Ont., December 17th. Dr. Caw was a graduate of Victoria University and was for forty years president of the Parkhill Liberal Association, a member of the school board, and a director of the West Williams Agricultural Society.

Dr. I. J. Lane died at Edmonton. Dr. Lane was born in Williamsburg, Dundas County, and graduated in 1886 from Queen's University.

Dr. T. G. Brereton, of Bethany, died December 10th.

Dr. Edwin Elisher Campbell, Jr., died at his home in Brockville, after an illness of two weeks with typhoid fever. Dr. Campbell was born at Royal Oak, Mich., in 1883, and when six months old came to Canada with his parents. Dr. Campbell graduated with honours from Syracuse University in 1909.

News

A CHANGE has been made in the quarantine service at Halifax, under which Dr. Victor N. McKay has been appointed assistant port physician and bacteriologist at a salary of $1,800 per annum, and residence on Lawlor's Island.

DR. A. S. MOORHEAD, of Toronto, has been awarded the final fellowship of the Royal College of Surgeons.

CALGARY is to have a new isolation hospital. It has not been decided where the building will be located, but if the city is unable to make arrangements with the General Hospital board for the location of the building on the grounds surrounding the General Hospital, it will be placed on the site of the present small-pox hospital, to the north of the city.

A NEW hospital for Lambton County, Ont., is to be erected. It is to accommodate fifteen persons suffering from incurable diseases.

THE new hospital for small-pox patients that is to be erected on Porter's Island, Ottawa, will cost about thirty thousand dollars.

DR. CAULFEILD, pathologist to Gravenhurst Sanitarium, has returned from Vienna.

WORK commenced in the university pathological department in the new buildings of Toronto General Hospital on January 11th.

THE Association of Military Surgeons of Canada meets in Ottawa during the third week of February, under the presidency of Major Le Bel.

THE promoters of a public hospital for Tillsonburg have opened a subscription list with the object of securing $15,000.

A BY-LAW has been passed in St. Thomas authorizing the city council to raise $10,000 for the erection of an isolation hospital.

It will probably be built at the west end of Chester Street, but the details have not yet been fully considered.

A NEW hospital, the St. Paul's, will shortly be erected in Vancouver. The building will cost about $250,000 and will accommodate about three hundred patients and sixty nurses. The hospital is being built under the auspices of the Sisters of Charity of Providence.

THE seventeenth International Congress of Medicine will be held in London from August 6th to August 12th, 1913, inclusive, under the patronage of the king and the presidency of Sir Thomas Barlow. Dr. W. P. Herringham is the honorary general secretary, and may be addressed at 13 Hinde Street, London, W. The subscription price is $5.00 An applicant, when sending his subscription, should inclose his visiting card indicating his medical qualifications and titles, and his address. Cards of membership will then be sent out. The sections of the congress are twenty-two in number, and in addition there are three sub-sections.

THE eighteenth annual meeting of the Royal Victoria Hospital was held in Montreal on January 23rd. It was decided to commence operations on an extension, which will provide for sixteen additional rooms, to meet the increased demand for private accommodation. Sir Edward Clouston, the president, promised to assume the entire expense of this new wing, and its equipment. The report of the superintendent showed that the number of patients admitted during the year ended December 31st last was 4,673, an increase of 364 on the previous year. In the out-patient department the total number of patients treated was 4,579, and the aggregate of visits was 29,204. The ambulance made 1,644 trips, as against 1,481 calls the previous year. The income for the year was reported at $199,564.25, while the expenditure amounted to $214,027.41, leaving a deficit of $14,463.16 to be provided for.

THE ninth annual Congress of the Association Internationale de Perfectionnement Scientifique will be held from the 3rd to the 31st of August, 1912, in the Balkans, in Turkey, and in Greece. The first meeting will be held at Evian-los-Bains, and the last at Aix-les-Bains. The general secretary, Dr. Ghislain Housel, may be addressed at 12 Rue François-Millet, Paris XVI.

THE trustees of the National Sanitarium Association advise that a free dispensary for charity patients has been opened in connexion with the head office at 347 King Street West, Toronto. This institution will be under the joint supervision of Dr. Kendall, physician-in-chief, Muskoka, and Dr. Dobbie, physician-in-chief of the Toronto Free Hospital.

THE trustees of the National Sanitarium Association announce that they have appointed Dr. W. P. Caven, Dr. J. T. Fotheringham, Dr. H. B. Anderson, and Dr. Harold Parsons as consultants to the Muskoka Cottage Sanatorium and the Muskoka Free Hospital.

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE seventh meeting was held January 5th, 1912. The following programme was presented:

CASE REPORTS: (1) Endocarditis, H. B. Cushing; (2) Some Cases of Fractured Pelvis, J. M. Elder.

PAPER: Clinical and Pathological Notes upon Certain Sub-Tropical Diseases. Illustrated by lantern slides. Fraser B. Gurd.

SYNOPSIS OF PAPER: Factors determining relative incidence of disease in different latitudes; study of amœbiasis, uncinariasis, pellagra, and leprosy.

PATHOLOGICAL SPECIMENS: Series by A. H. MacCordick:

1. Ruptured Duodenum. In a male aged twenty-four, who fell forty feet. Patient died two hours after admission. There had been continuous vomiting of blood, with distended and rigid abdomen.

2. Ruptured Spleen. Child of three years fell sixteen feet. Admitted to the hospital twenty-four hours later in a state of shock, with distended and rigid abdomen. Operation revealed a lacerated spleen, which was removed. The blood count was little affected. The child is now well, two years after the accident.

3. Ruptured Kidney. Man aged fifty, fell two feet, striking his side against a scaffold. He went to a Winnipeg hospital, where ruptured kidney was diagnosed, but operation refused. He entered

the Montreal General Hospital four months after the accident with a tumour in the side, weakness, and emaciation. He passed large clots of blood per rectum. Died ten days after admission. Autopsy revealed perinephritic abscess which perforated the bowel, with ruptured kidney.

The eighth meeting was held January 19th, for which the following programme was prepared:

LIVING CASE: Dentigerous Cyst. E. Hamilton White.

PATHOLOGICAL SPECIMENS: (1) Stomach from a case of Carbolic Acid Poisoning; (2) Carcinomatous Ulcer of Rectum; (3) False Passages in Urethra. E. J. Mullaly.

PAPER: Endocarditis. J. C. Meakins.

CASE REPORTS: (1) Interesting Case of Injury to Spinal Cord, D. A. Shirres; (2) Notes from the Mayo Clinic, J. Alex. Hutchison.

TORONTO ACADEMY OF MEDICINE

THE monthly general meeting of Toronto Academy of Medicine was held January 2nd. Dr. Powell referred to the death of Dr. Samuel Westman, a valued Fellow. He named Drs. Fotheringham and Henderson as a committee to draught a suitable resolution, to be brought before the Academy at a subsequent meeting.

A resolution was passed that a deputation be sent to the provincial secretary in connexion with the difficulty which many members were experiencing from the regulations for the use of motor cars.

A resolution was presented reprobating the secret division of fees, and an animated discussion followed. It seemed to be the opinion of most of the surgeons present that the conditions suggested in the resolution did exist, and that such practices should be dealt with severely. The fact was elicited, however, that there was some slight imperfection in the wording of the motion. Dr. H. S Anderson moved, seconded by Dr. John Hunter, that the whole matter be referred back to a committee chosen from the different classes of the profession. This motion carried.

SHERBROOKE MEDICAL SOCIETY

The annual meeting of the Sherbrooke Medical Association was held December 22nd. The officers for the following year are: president, Dr. E. J. Williams; vice-president, Dr. F. Bertrand; secretary-treasurer, Dr. F. A. Gadbois; council, Drs. Austin, Camirand, Mackay, and Ledoux.

CAPE BRETON MEDICAL SOCIETY

The Cape Breton Medical Association held its annual meeting on December 9th. The following officers were elected: president, Dr. G. H. Murphy; vice-president, Dr. J. K. Macleod; secretary-treasurer, Dr. J. G. B. Lynch.

HURON MEDICAL ASSOCIATION

The Huron Medical Association met December 13th. This association has been in existence for over forty years, and a measure of reorganization was required. New by-laws were adopted, and the officers for the following year appointed. The meetings will be held at Wingham, Goderich, Seaforth, and Clinton, alternately. The next meeting will be held in Wingham in March.

SOUTH ONTARIO AND WEST DURHAM MEDICAL ASSOCIATION

The annual meeting of the South Ontario and West Durham Medical Association was held at Oshawa, December 27th. The retiring president, Dr. C. F. Macgillivray, delivered an address. The election of officers resulted as follows: honorary president, Dr. J. T. Fotheringham; president, Dr. A. Farncomb, Newcastle; vice-president, Dr. Beith, Bowmanville; secretary-treasurer, Dr. J. F. Finnigan, Oshawa; executive committee, Dr. John Moore, Brooklin; Dr. R. Beit, Oshawa; Dr. Proctor, Whitby; and Dr. McCulloch.

VANCOUVER MEDICAL ASSOCIATION

At the annual meeting of the Vancouver Medical Association the following officers were elected for the ensuing year: President, Dr. W. B. McKechnie; vice-president, Dr. W. F. Coy; secretary-treasurer, Dr. J. W. McIntosh; auditor, Dr. W. L. Coulthard.

October 23rd. The Clinical Section met in the General Hospital, when Dr. A. W. Hunter was appointed chairman and Dr. McDermot, secretary.

November 27th. The second meeting of the Section was held in St. Paul's Hospital, when interesting cases were shown and discussed.

November 13th. Dr. W. B. McKechnie, the incoming president, delivered his inaugural address. Dr. V. E. D. Casselman read a paper on "Eclampsia," and cited several cases from practice. Dr. W. B. Burnett was appointed to the staff of the General Hospital.

December 11th. At the general meeting of the Society papers were read as follows:

1. Drs. Burnett and Gourlay, "Summary of recent report of treatment in obstetrics in Dublin Rotunda."
2. Dr. F. G. Logie, "Report of cases of rheumatic fever in infants."
3. Drs. Spankie and Schinbein, "Cases of complete excision of the penis."

THUNDER BAY MEDICAL SOCIETY

The following officers were elected at the annual meeting of the Thunder Bay Medical Society: Honorary president, Dr. A. Beck; president, Dr. M. B. Dean; vice-president, Dr. Crawford McCullough; secretary-treasurer, Dr. Aikens; executive, Dr. Pratt and Dr. Wodehouse.

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LOW PERCENTAGES IN INFANT FEEDING

By Robert Dawson Rudolf, M.D., F.R.C.P.

Professor of Therapeutics in the University of Toronto

THE dietary of infants may be considered under two headings: (a) that of healthy children; (b) that of diseased ones. All are agreed that whenever it is possible, and it generally is possible, an infant should be nourished from the breast. In a few cases it becomes necessary to wean an ailing child, but this should not be done without grave thought. The child will have to have some food, and the mother's milk will usually agree with it better than anything that may be substituted for it. There are exceptions to this, but they are very few, if one exclude those due to passing disturbances of the mother, caused by some nervous, dietetic, or drug factor, which can usually be corrected without the necessity of weaning the infant.

Where it is found to be impossible for a mother to nurse her child entirely and a wet nurse is not available, it is wise to resort to "mixed feeding," the mother nursing as often as she can; the balance of the necessary diet being made up of some milk mixture or other artificial food. Every breast-fed infant should eventually be gradually weaned, and thus the suffering to mother and child that occurs when the weaning is done suddenly will be avoided. In India, where people are so apt to become suddenly ill, it is a common custom to give the infant one bottle a day from the time of birth; so that if at any time the mother be temporarily unable to suckle it for a day or two, the child can be artificially fed, having already been trained in the use of the bottle.

When an infant cannot be raised entirely, or at all, on the

Read before the Pædiatric Section of the Academy of Medicine, Toronto, in December, 1911.

breast, then the question of artificial feeding arises. At once it will be admitted that, however well we feed a child artificially, its chances of surviving are greatly less than if it be raised upon the breast. No artificial food can completely take the place of the natural one.

Looking first at the artificial feeding of healthy infants, it would naturally seem that, as the child cannot get its mother's milk, it should be given a mixture as nearly approaching that as possible, and hence the introduction of percentage feeding. The composition of mother's milk being known, cow's milk is diluted and treated with cream of a certain strength, milk-sugar, etc., until the mixture resembles in its percentage strength of proteid, fat and sugar, human milk. Usually the percentages used are much below that of human milk. Percentage feeding is chiefly of American growth, and, theoretically sound as it appears to be, it has not found extensive favour on the other side of the Atlantic. Thus G. A. Sutherland[1] writes: "It is possible that in America the infantile stomach does require some such milk [as such a method provides], for one cannot but be struck by the amount of writing and the diversity of opinion in that country on the subject of infant feeding. In this country [England] there are but few milk laboratories and the need for them does not appear to be urgent. . . . Opinions still differ as to the effects of this mechanical treatment of milk, the splitting up and re-combination. Some hold that the proteids and the fats are rendered less digestible. It is admitted that a considerable amount of practice is required before the exact percentage amounts necessary for different infants can be learned. Many clinicians find themselves unable to determine those minute percentage differences in the proteins, fats, etc., while many hold that such minute differences are not called for in infant feeding. . . . Before recommending the use of laboratory milk we should like to see some more evidence of the necessity for it in this country, and some more unanimity of opinion as to its advantages in America." The writer thinks that in the case of diseased children a knowledge of the exact percentage composition of the food is often of great value, as it can then be altered as desired. A laboratory, such as the one connected with our Children's Hospital, is here of great advantage, as we may get milk mixtures made of the exact composition desired, but he would agree with Robert Hutchison,[2] when he says that "The correction of the relative proportions of casein and albumin, although theoretically sound, is practically not a necessity in the case of healthy infants."

We must remember this cardinal fact,—the infantile alimentary tract can exert a marvellous selective power, in that, from a most varied diet introduced into it, it can select what the body requires, and then reject the rest. Otherwise we cannot explain the fact that children, apparently the picture of health, are raised on such divers diets as (1) pure undiluted cow's milk, as is so largely carried out in France on infants, almost from the time of birth; (2) buttermilk, which has been used in Holland for centuries; (3) various milk mixtures; (4) goats' and asses' milk; and (5) proprietary foods, many of which can be shown to be but very imperfect imitations of human milk.

In the Edinburgh Hospital for Sick Children they recently tried,[3] with fear and doubting, the feeding of infants upon undiluted cow's milk, in the way introduced by the late Professor Budin, and since employed so largely in France. The method consists in giving undiluted cow's milk, which has been heated to 212° Fahr. and kept at that temperature for forty minutes. "The results were excellent," says Dr. Fowler, "and unexcelled by any other method short of breast feeding." F. S. Langmead[4] read a paper before the Harveian Society of London lately upon the use of undiluted cow's milk in the feeding of infants. He added citrate of soda in the proportion of two grains to the ounce of milk. He had treated seventy infants thus at the Paddington Green Children's Hospital in the past three years, all of whom were not progressing by other methods. All had done well and gained weight. No rickets were observed. It was not found suitable in acute diarrhœa. Again, F. G. Haworth writes in the *British Medical Journal* of 1907:[5] "I have used undiluted cow's milk sterilized now for ten years, with five per cent. addition of lime water and sugar. I begin the feeding at birth, feeding for the first week every hour and a half, with ten feeds in the twenty-four hours; after that for a month every two hours, and eight feeds in the twenty-four hours. It has not disagreed in spite of the larger amount of proteid in the form of casein. . . . I hope that some men will be induced to try the undiluted sterilized pure cow's milk as a food for infants, and let us hear less of barley water and other patent foods." Fowler[3] says in this relation: "I have certainly observed the substitution of undiluted for diluted milk followed by cessation of colic and curdy stools. The prolonged heating, which is an essential feature of the method, precipitates the lime salts and thus materially softens the curd produced in the stomach." Dingwall Fordyce, quoted by J. I. Fowler,[3] finds that *in vitro* the curd of sterilized milk is more flocculent than that of raw milk, but is more resistant to artificial digestion. He suggests that, when milk treated thus is employed, the process of gastric digestion is to a large extent superseded, and that the flocculent curd passes readily through the pylorus. I have lately been cautiously trying the use of sterilized and citrated undiluted cow's milk in the feeding of ill-nourished out-patients and am well pleased with the results. We have always introduced it gradually; thus, when a child comes to the department, who is ill-nourished and not gaining weight, and is found to be taking some dilute mixture, we give, say, two meals of the pure milk and the next week increase it to four, and then put the child entirely on the pure milk. We have also tried buttermilk rather extensively and find that it is as likely to agree with a previously healthy child as is any milk mixture, and even in the case of infants suffering from intestinal disturbance it is often of value.

The fact is that in infant feeding theory has run riot, very much to the detriment of the infant population of civilized countries. A few years ago the belief was prevalent, and still holds sway with some, that the great difficulty in artificial feeding was the digestion of the proteid of cow's milk. The so-called "curds" that so frequently appear in the stools were believed to be evidence that the casein had not been digested, and a further assumption was then made that not only was the casein not digested but that it was a source of irritation to the bowel. After a while it was discovered that the "curds" were not usually composed of proteid at all, but consisted chiefly of fatty acids and soaps. Further, Czerny and Steinitz[6] have conclusively shown that infants absorb nitrogen very easily when healthy, and that even children suffering from catarrh of the alimentary tract do so almost as well as do the normal ones.

The next theory was that of Finkelstein and others that the fat was the chief source of trouble in artificial feeding.[6] The fact that fat appeared to excess so frequently in the stools was an argument in favour of its non-absorption. From 9 to 35 per cent. of the dried stools of normal children consists of fat, while in disease this percentage may reach as high as 67 per cent. Here, as in the case of the proteins, it does not at all follow that because an element of the food is not absorbed that therefore the increased *débris* in the bowel is a cause of irritation. One may illustrate this by the giving of a large dose of bismuth. The drug will not be absorbed and will hence soon appear in the stools, but its presence has not caused irritation. If it be argued that a food, when not absorbed, must become a focus of harmful bacterial activity, one can only reply that such is a pure assumption.

Sugar appears in the stools in very small amounts, and it was therefore argued that it must nearly all be absorbed, but, as Czerny and Steinitz point out, there is a fallacy here, as it may, and probably does, become decomposed in the intestine as a result of bacterial activity.

Most recently Finkelstein and Meyer, as quoted by J. L. Morse,[10] state that diarrhœal diseases originate in a functional weakness of the intestine, and that this weakness is kept up and increased by fermentation. They then sum up by saying that sugar is the special and primary cause of fermentation. Thus the proteins, the fat and the sugar of cow's milk have each in turn been blamed, and the dietary recommended has varied accordingly.

The question of whether a child, which cannot be nursed in the natural way, should be given pure undiluted cow's milk, buttermilk, proprietary foods, or milk mixtures, or indeed asses' or goats' milk, is not being discussed here, the desire being merely to emphasize the fact that from any of these very various diets a healthy infant can select and absorb the amount of nourishment that is necessary for the maintenance of its vitality and growth. The all-important point is that, whatever diet be selected, the child must be given sufficient in the twenty-four hours to keep it in health. It has been shown from much experimental work that an infant requires about 90 to 100 calories per kilo of body weight per day when it is on the breast, and about 110 to 120 calories per kilo when artificially fed. Of course a food may yield a sufficiency of calories and yet be otherwise unsuitable—one must see that a due amount of protein, fat, and carbo-hydrates be present; although, as already said, the exact proportion of these does not seem to matter so much, so long as there be sufficient of each. One-seventh of the child's weight will be roughly the weight of either mother's or cow's milk that will be required to give this amount of calories; in other words, about a pint of milk for a child weighing eight pounds.

Any diet that yields less than this number of calories is an insufficient one, no matter how perfectly it be proportioned. After the first few days of life it is better to over-feed than to underfeed a healthy child; in the former case the infant will probably reject the excess, but in the latter it has no redress and must fail. In a leaflet issued last year in England by the National League for Physical Education and Improvement, entitled "How to Bring Up Baby," and which has been most extensively circulated, the advice is given that a baby during the first two weeks of life should be given bottles containing one part of cow's milk and three parts of water. This means that either the infant is placed upon a starvation diet, or else must drink far more at each feeding than its stomach is meant to contain. This argument against excessive dilution must constantly be kept in mind. Who has not seen a weakly infant refusing most of its bottle, which contains much water and little nourishment? If the child be a month old its stomach can only contain about two ounces of fluid, and yet two ounces of what it is taking may not hold sufficient nourishment to nourish it properly. The result is that the infant either overloads its stomach at each meal, or else refuses much of its food and suffers accordingly. The same leaflet further recommends that a child of five to six months should get exactly a pint of milk a day. Now such a child should, on the average, weigh nearly fifteen pounds and should get nearer two than one pint of milk in the day in order that its growth and strength may be maintained. Dr. Cameron Kidd,[7] who refers to this leaflet, says that "such feeding as is recommended here is nothing short of semi-starvation," and one cannot but agree with him.

In a recent address, Sir James Crichton Browne[8] gives some interesting facts in connexion with the relation of growth of young animals to the strength of their natural milk, which are of interest:

"I should like to refer to a highly interesting table by Aberbalden, and quoted by Minot, in which it is shown, on the one hand, the number of days needed to double the body weight in a number of species of animals, and, on the other, the constituents of the mother's milk of these animals. Disregarding the other constituents of the milk and considering only the albuminoid or proteid contained in it, an exact proportion is found to exist in each case between the amount of proteid in the milk and the rate of growth of the animal. Thus, at one end of the scale we have man requiring 180 days in which to double his weight and living on milk which contains only 1·6 parts of proteid in one hundred parts of milk, and at the other end we have the rabbit, which doubles its weight in seven days and lives on milk containing 10·4 parts of proteid in 100 parts of milk. Intermediate between these we have the horse doubling his weight in sixty days and with 2·0 parts of proteid in 100 parts of milk, the goat doubling its weight in nineteen days and with 4·3 parts of proteid in 100 parts of milk, and the dog doubling its weight in eight days with 7·3 per cent. of proteid in its milk. In every case, as is the proteid content of the milk so is the rate of growth, rapid when it is large and slow when it is small. This looks at first sight, says Professor Minot, as if there were a relation between the composition of the milk and the period of growth of the animal, but you know very well that if you take the milk of the cow containing 3·8 parts of proteid in 100 parts of milk and feed with it a human baby whose mother's milk contains only 1·5 per cent. of proteid, the baby does not grow at the same rate as the calf, doubling the weight in forty-seven days, or even at a reduced rate, notwithstanding the increased ingestion of proteid. It is obvious that it is a something more complicated than a question of mere food supply with which we have to deal. We have here, in fact, one of the beautiful illustrations of the teleological mechanisms of the body. The various species of animal have their characteristic rates of growth, and by an exquisite adaptation the composition of their milk has become such that it supplies the young of the species each with the proper quantities of proteid material which is needed for the rate of growth of which the young offspring is capable." This being the case all through the mammalian world, it surely should make us hesitate long before unduly diluting the food of a healthy infant.

We come next to the artificial feeding of infants suffering from gastro-intestinal troubles. Such disturbances may vary, of course, from slight degrees only evidenced by the appearance of so-called curds with mucus in the stools up to those virulent cases of cholera infantum, where an infant may in a few hours sink to a cadaveric state and soon die. Now, as regards the first ones, those in which the only thing abnormal is perhaps a slight looseness of the bowels, and often not even that, but merely the report that the stools are not right, and the child seems well and is not losing weight, I think that we may agree with D. J. Milton Moore,[9] of Atlantic City, when we says that, as long as an infant is looking well and gaining weight, we may ignore the presence of "curds" and mucus in the stools and other so-called signs of indigestion.

In the more severe cases of alimentary disturbance it is often necessary to cut down the total food very much, even to the extent of giving the patient nothing but sterilized water for a day or two, but in all cases where we have cut down the diet to a point below that necessary for the maintenance of health and growth (i.e., to that representing less than 100 to 120 calories per kilo of body weight), we should remember that the patient is in a danger zone of starvation, out of which it is necessary to take him as soon as possible. The infant cannot gain strength, much less weight, while in this zone, even though the stools improve. Often the stools, indeed, do not improve although the diet is so low, and he must not be kept on this low diet until they do or he may get too weak to benefit by any increased nourishment which is at last given to him. We are treating not the stools but the living infant, and one that needs much nourishment. A marasmic infant can no more survive if starved than can a healthy one. Even if dieted ever so carefully he *may* die, but if kept long enough on an insufficient allowance of nourishment he *must* do so. These statements may seem too evident, yet every clinician sees infants at the out-door departments of the hospitals, and elsewhere, who, because of some digestive disturbance, and often without even this excuse, have been put by over-anxious mothers on, and kept on, a starvation diet of barley water, oatmeal water, whey, or some excessively weak milk mixture, and who only require to be more abundantly fed to rapidly gain weight and otherwise get back to the normal state.

SUMMARY

1. Every infant should be raised on the breast wherever possible, as no artificial feeding can give such good results as this natural food.

2. Where a child cannot be fed entirely on the breast, "mixed feeding" should be used.

3. A healthy infant, who must be fed artificially, must get sufficient food to supply it with at least 100 to 120 calories per kilo of body weight per day. This equals about one pint of cow's milk for a child weighing eight pounds.

4. Much dilution of the food should be avoided, as the child must in this way take too bulky meals in order to keep up its nourishment. Such water as the child requires can more easily be given between meals.

5. When it becomes necessary, on account of some digestive disturbance, or in fact any illness, to reduce a child's nourishment, this reduction should be receded from as soon as possible, as the patient cannot gain strength upon an insufficient diet.

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PULMONARY TUBERCULOSIS

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TUBERCULOSIS must of necessity occupy a very prominent position in the annals of medicine, for it is responsible for more deaths than all other infectious diseases put together. Of the deaths due to tuberculosis, by far the greater proportion are traceable to the form known as phthisis or pulmonary tuberculosis. And yet, in spite of its extreme prevalence, it aroused, until comparatively recent times, but little interest amongst the members of the medical profession. If they did not look upon it as hopelessly incurable, at least they regarded the sufferer's chances of recovery or cure as slender in the extreme. They were content to continue along the ancient and well-worn path of treatment which consisted in the belief that fresh air and good food were the only possible methods to employ in combating the disease.

True, from time to time other remedies were vaunted as giving excellent results, but they all, without exception, lacked any scientific basis whatever, and soon fell into disrepute. Cod liver oil had a somewhat protracted trial, and even now is much prescribed by certain physicians who claim for it a specific action on the bacillus tuberculosis. Injections of formalin, iodin, and other antiseptic substances at various times were given a trial. From the inhalation of certain gases, too, a great deal was expected, for it was thought that they would come in contact with the diseased portion of the lung and thus destroy the offending bacilli. Creosote was another drug which many physicians prescribed, and were it not for its effect on the stomachs of patients this drug might prove efficacious in some cases. Theoretically, perhaps, some of these ideas were sound, but in practice the success did not attain to that hoped for. There was no scientific basis for their application. Cod liver oil certainly added to the body weight, but is there any proof that it had the specific action claimed for it on the bacilli or the diseased tissues? Can it be proved that antiseptic substances injected into the blood stream would ever come in contact with the lesion in the lung, or if they did so that they would not be completely altered in composition during their passage through the body? Perhaps the inhalation of gases seemed to have more logical support behind it, but even here it seems very doubtful if the desired goal would be reached. The destruction of a few thousands of bacilli, more or less, would make little difference to the activity of the disease. Their places would soon be taken by millions more. It would only be by the destruction of every single bacillus in the lesion that success and cure could be hoped for. I do not wish to infer that this era in the history of the study of tuberculosis was so much waste time. Koch had discovered the offending organism, and it was recognized that patients did get well, and also that the earlier a case came under treatment the more hope there was for its ultimate cure. Consequently efforts were directed, and with much success, towards the earlier diagnosis of the disease, and the examination of the sputum by means of the microscope was brought to the aid of the stethoscope. The art of diagnosis by means of the stethoscope, too, was brought to a finer point. These efforts attained the success they deserved, and the mortality from the disease was very considerably reduced. This decrease was in part also due to hygienic measures that were directed towards combating overcrowding and insanitary dwellings, two frequent factors in the ætiology of consumption.

It is only in comparatively recent times that pulmonary tuberculosis, with its diagnosis, treatment, and cure, has been placed on a really scientific footing. And so it is that, given favourable circumstances, we can now hope to cure a large percentage of cases which come to us for treatment. I will go so far as to say that, provided one can choose one's cases so as not to admit really advanced patients to a sanatorium, one can have a reasonable hope of curing over eighty per cent. of such cases. Now, the causes which have led up to this satisfactory state of affairs are many. In the forefront, I think we can place the knowledge that has been obtained on the rôle played by bacteria on the blood. For this has led up to methods of earlier diagnosis. It has enabled us to know, in many cases where the stethoscope has failed us, that a patient is suffering from tuberculosis, the sputum having been examined for tubercle bacilli without result. The methods I refer to are, first, von Pirquet's cutaneous test; secondly, Calmette's ophthalmic reaction; thirdly, Moro's percutaneous test; and, lastly, diagnosis by means of the opsonic index.

But even before this period there had come into existence a new method of treatment known as the graduated labour system, which seems destined to revolutionize sanatoria and their methods. This had been initiated at the Brompton Hospital sanatorium by its originator, Dr. M. S. Paterson, and it is now largely employed at many sanatoria throughout the British Isles. When Dr. Paterson first set in motion this scheme there was no scientific basis to show why it should be successful. Common-sense reasons led him to adopt it, and after it had been in working order for some time it was found that over eighty per cent. of the patients so treated were still at their former occupations five to six years after discharge. These figures were far in advance of those of any other sanatorium relying on previous methods of rest and forced feeding. It was only after some considerable time that it was shown to have a really scientific basis. Then, by numerous experiments on the blood, carried out by Dr. A. C. Inman and myself at the Brompton Hospital, it was proved that Sir A. E. Wright's theory of auto-inoculation explained it all. We examined altogether over three hundred bloods of these patients, and the results obtained were of the greatest benefit in explaining and elaborating the scheme. So that at the present time the same number of beds can accommodate forty per cent. more patients during the year than they could accommodate at the time graduated labour alone was employed without the knowledge of this scientific proof and help.

I purpose in this paper to discuss in some detail the graduated labour system of treatment, how it is worked at the Brompton Hospital sanatorium, and how it must be modified to suit the different conditions which prevail in Canada. Further, I purpose to discuss the theory of auto-inoculation, the effect of bacterial diseases on the blood, and its application to graduated labour.

When Dr. Paterson was appointed to the medical superintendentship of the Brompton Hospital sanatorium at Frimley, he noticed that many tuberculous persons who had followed their ordinary occupations up to the time of admission were in a very fair condition of health, even though, in some cases, they had a considerable amount of disease as evidenced by physical signs. He cited one case in particular. It was that of a labouring man who had worked for forty hours, almost without rest, altering a large water main. In spite of his having fairly extensive disease, he was apparently none the worse for this arduous work. His argument was this: If consumptive people under adverse circumstances and without any medical guidance could act in such a way, should they not be able, under ideal conditions and with the work carefully graduated in accordance with their physical state, to undertake useful labour?

Up to this time all patients suffering from pulmonary tuberculosis had been treated in the same way, rich and poor alike. This so-called treatment had consisted in complete rest and forced feeding. At the conclusion of the period of treatment the same advice had invariably been given to all: that they must live an open-air life for the rest of their existence. I myself have heard an eminent physician tell a labouring man that he ought to spend the remainder of his days in Siberia! I think it would not have proved a very long remainder. Dr. Paterson recognized the fact that, though the advice was excellent in its way, yet, in the case of all patients with whom he would come in contact at the Brompton Hospital sanatorium, it would be impossible of fulfilment. All his patients were dependent for their livelihood on the particular trade or profession in which they had been trained, and they knew no other. He knew, of course, that he would encounter a great deal of opposition to his idea of making consumptive people work, but he determined to give the method a trial. His object was to get the patients into such a physical condition that they would, on discharge, be able to return to their former occupations in every case. He hoped the effect on their muscles would enable them to perform the hard, manual labour that would be necessary in many cases on leaving the sanatorium. Dr. Walther, at Nordrach, had obtained very good results by means of graduated walking exercise, his patients walking up to twenty-four miles a day. In this method, however, only the lower limbs were utilized, and as the muscles of the upper limbs and thorax are supposed to have a more direct influence on the expansion of the lungs, it was thought well to bring them into play also.

There was, as he expected, a great deal of opposition to the idea. The patients looked on it as completely at variance with all their previous conceptions of the treatment suitable to the disease, and they regarded it at first as being done more for the benefit of the institution than for any curative effect on the lung trouble. Some feared, too, that the exertion might tend to poduce hæmoptysis and pyrexia. It had not done so, however, in those cases noted as having worked before admission, so why should it now, when the work was to be most carefully graduated? These were the reasons, entirely theoretical and of common-sense origin, which urged him to adopt these measures, and it only remains to say that the success of the method was assured almost from its inception.

True, there were many difficulties to be overcome. Patients were apt to be sullen and discontented when first made to work.

They very soon found, however, the great benefit that accrued to their physical well-being from the labour, and they then took to it with great zeal. In fact, after a time they were inclined to do too much, against orders, and in this way several of them had rises of temperature and had to be ordered to bed. One patient even contracted a severe pleurisy from doing more than his instructions, and this kept him back for months, though he ultimately did well. The supreme importance of obeying orders was clearly seen by these patients, and they were of benefit as examples to the others.

Naturally some guide had to be found as to the amount of work to be prescribed. After a little experience, it was shown that the temperature chart and the clinical symptoms were a sufficient guide in themselves, and the extent of the disease was found not to be of so much importance as it had hitherto been considered. On the one hand, a patient might have a very small lesion in his lung, just a small amount of dullness at one apex with a few râles after cough, and yet his general condition and his resistance to the disease might be so poor that he would be able to undertake but very little work. On the other hand, a patient with a very considerable amount of disease, having three or four lobes affected with dullness and moist crepitations over a considerable portion of the lungs, which had been in existence for some time and possibly with some fibrosis, might be in good general condition and have a high resistance, and consequently be able to perform very hard work. The resistance of a patient with a small and early lesion is an unknown quantity, that of a patient with long-standing disease with fibrosis must be good or he would not have lived so long.

There can be no doubt that resistance plays a very important part in all bacterial diseases. I think this is proved by the fact that there is a percentage of cases, though happily a very small percentage, upon which no treatment, however early in the history of the disease it be instituted, will have any effect whatever. The lesion may be quite a small one and the patient's general condition even may appear to be good, and yet he will not respond to treatment. Probably, in these cases, the virulence of the organism plays an important part, but there can be little doubt that there is, added to this, a lowered resistance on the part of the patient.

The point of temperature which was taken to indicate the danger mark was 99° F. in the case of men, and 99·6° F. in the case of women. When the scheme was first set in motion, any patients whose temperatures rose to these points at night were put back to bed for some time. Since those days, however, this rule has undergone some modification as the result of further experience.

Let us take it, then, that a patient has been lying in bed until his temperature has been continuously below the normal line for ten days. The next step is to allow him to get up for a certain time every day and note the effect, if any, on his temperature and symptoms. It is my habit to start patients with one hour a day, sitting up in a chair but without putting on any clothes. Needless to say they should be wrapped in sufficient blankets to keep them warm. The process of dressing, after a lengthy period in bed, is a trying one and requires considerable exertion. It is not until patients have been getting up for one hour a day for three or four days without any rise of temperature to 99° F., that I allow them to dress. They then sit up for one hour a day dressed, and this is gradually increased at intervals of about five days, until the patient is up the whole day, but all the time is doing no more than sitting in a chair. At the end of that time they may be allowed to walk as far as the dining-hall for their meals and back, and after having been at this stage for about five days, gentle walking exercise is prescribed. The distance first set to be walked should be half a mile a day, and it should be walked slowly, at the rate of about two and a half miles an hour, and if possible over gently undulating ground. A close watch being kept on the temperature chart and feelings of the patient, the distance walked is gradually increased. One mile, two miles, four miles, six miles, and, finally, ten miles a day are prescribed in turn, and about a week is spent at each distance.

At the end of this time the patient is fit for work, but it must be remembered that, up to this point, he has only been utilizing his lower limbs, and consequently the muscles of his arms, chest, and abdomen will be in a somewhat flabby state. It is for this reason that the next step, the first work grade, is so important, and in practice it is found that patients spend more time in this grade than in any other.

The work prescribed must be of a light nature, but must bring into play the muscles of the trunk and upper extremities. The work should be divided into grades as follows:

Grade I. Otherwise known as the "basket grade." Patients collect, into a small basket, mould for spreading on lawns, weeds, or dead flowers, and carry them a certain distance. Baskets hold a weight of ten pounds. Time to be spent on this grade, one week.

Grade II. Similar to Grade I, but larger baskets should be used, holding a weight of eighteen pounds. The material should be carried a distance of fifty yards. Time to be spent on this grade, one week.

Grade III. Patients to sweep paths and cut grass, cut grass edges, chop firewood, hoe, paint with a large brush, and clean windows. Time to be spent on this grade, one week.

Grade IV. Patients to use a small shovel or dig with a small fork. A hand-cart containing soil or stones may be pulled by patients in this grade, five patients working together in pulling such cart. Mowing grass may be substituted, three patients to a sixteen-inch mower. Time to be spent in this grade, two weeks.

Grade V. Patients to use a large shovel or a small pick-axe, or dig with a large fork. Pulling down trees, trenching ground three feet deep, hauling stones in a cart, using a wheelbarrow, and doing general heavy navvy work, or sawing and planing wood may be substituted. Time to be spent in this grade, three weeks.

Grade VI. Three weeks before their discharge, patients are promoted to this, the final, grade. The work is similar to that in Grade V, but they spend six hours a day at it, instead of four. If possible the patients on this grade are set to work at their own trade or profession, so as to bring into play the special muscles used for that particular work. In the case of women patients, the final work prescribed is scrubbing floors and general house work, such as they are likely to have to perform at home.

This is a rough outline of the routine of work as carried out at the Brompton Hospital sanatorium. Different conditions will require modifications of this programme, and especially is this the case in Canada in the winter months. Some difficulty will be experienced then in finding suitable work for the patients to perform, owing to the small amount of work possible on the land when frozen or covered with snow.

The work should always have some definite object in view, for work that is purposeless will without doubt become wearisome and monotonous and patients will not take kindly to it.

At the sanatorium at Byron, London, I have instituted the following routine: Picking up stones from the land, collecting them into baskets and carrying them to a cart. The baskets used should be of two different sizes, and will thus constitute two different, the small and large basket, grades. Corn stalks are piled together in a heap and the cobs removed, husked, and prepared for the fowls. Paths are swept clear of snow when there is any, or any parts of the grounds, as may be desired. Loose wood is collected into heaps for firewood, and the larger wood is collected in the same way and then sawn into lengths for burning in the various furnaces. These logs can then be raised on to a hand-cart and removed to the various buildings.

Several of these "jobs" can be performed in a barn when the weather is wet or too severe for the patients to work in the open air. Difficulty may be found in regulating very exactly the amount of work suitable for each patient, as the particular form of work possible may be somewhat too heavy for his condition. For instance, sawing wood is too strenuous a task to start on directly after walking exercise is finished if performed for too long, but this difficulty can be overcome by regulating the time spent at the work. The sawing may be performed, but should only be done for a short time each day, and the time may be gradually increased in accordance with his general condition and if no rise of temperature occurs.

Skipping, too, is a form of exercise which may be utilized with much benefit, especially by the female patients. The point aimed at throughout should be to gradually increase the amount of energy expended on any particular work, watching carefully the while to see that this is not excessive. In the spring and summer it will be an easier task, and the grades can then be regulated in the same way as those I have sketched above.

During the whole of this routine the patients should lie down for an hour after each period of exercise, and this should be rigidly enforced. At some sanatoria in America and elsewhere a modified form of graduated labour has been instituted. The patients have been asked to keep the institution in a state of cleanliness and repair, and in some cases the grounds also. But it has been represented to them as being done for the benefit of the institution more than as actual treatment. I cannot but think that this method is to be strongly deprecated. If the patients are not given to understand that the work is prescribed in just the same way as medicine, and that it actually helps to heal the diseased lungs, they will not take kindly to it, and great difficulty will be experienced in maintaining the strict discipline necessary for the successful carrying out of this form of treatment.

On the admission of every new patient, I explain to him that I shall keep him in bed for a certain time and that after that I shall make him walk and work and that I am doing it because it helps his lungs to heal. I further tell him that as he himself does not know how much work he should be doing, he must be guided absolutely by what I prescribe for him, and that the rest I prescribe is fully as important as the work; for, whilst too much work will result in harm, too little work will not attain the amount of benefit required.

It cannot be too greatly emphasized that it is all treatment, scientific treatment, and that every minute of the twenty-four hours is vitally important. It is well to give the patients short lectures to make them understand the disease and why the method is used and how it acts, and also to teach them what steps to take to prevent them passing the disease on to others.

In order to explain the theory of auto-inoculation in pulmonary tuberculosis and its application to the treatment by means of graduated labour, it is necessary to study, to some extent, the subject of immunity and the action of the bacteria on blood fluids.

First, it is necessary to bear in mind the close proximity of the lesions of phthisis to the blood stream. The great vascularity of the lungs and the way in which the blood vessels become attacked and destroyed during the progress of the disease show this, and the frequency of hæmoptysis as a symptom of consumption accentuates it. A second very important point to be considered is the effect of respiration on the circulation. Any cause which hurries the respirations will hurry, too, the circulating blood, and thus the blood will be carried through the affected focus at a greater rate and the blood pressure will be raised.

Now all bacterial diseases are due, not so much to the actual presence of the micro-organisms themselves as to the fact that they throw out poisons into the blood stream. But this is not the only action they possess; they also stimulate the tissues surrounding the lesion to manufacture an anti-body to that poison, and it is according to which of these two bodies is gaining the upper hand at the moment that a patient feels better or worse. There is a continual duel in disease between the two substances. But the amount of toxin may be so great that no anti-bodies are formed, or very few, and the tissues are swamped, as it were, with toxin. This is what occurs in excessive auto-inoculation.

Metchnikoff and his school looked upon the leucocytes as being the only agent in the removal of bacteria, or any noxious substances, from the blood. That this is not the case, has been proved by Wright and confirmed by many other observers. Wright was able to separate all three bodies necessary for the phenomenon of phagocytosis; namely, white blood corpuscles, serum, and bacteria. The following experiment, which proves the existence in the blood of anti-body, is now ancient history, but on it depends the whole knowledge of phagocytosis, and on it, too, is based practically the whole subject of immunity, and therefore I think I need offer no excuses for repeating it.

The blood corpuscles he separated by bleeding himself to the extent of twenty or thirty drops of blood into a solution of citric acid and physiological salt solution, in order to prevent coagulation and hæmoptysis. Having done this, he centrifuged the mixture and pipetted off the supernatant fluid, washed the resulting deposit in salt solution and centrifuged again. The plasma had been removed in the salt solution, and he had now obtained blood corpuscles alone. Then he found that, on sloping the test-tube, the white cells rose to the surface, so that by taking a small amount from the surface he obtained almost entirely white cells. The bacteria he obtained in an emulsion by scraping off some of a growth of the particular organism into salt solution. The serum he obtained by drawing up some blood into a capillary pipette and allowing it to clot and the serum to be expressed. In this way he obtained all three bodies necessary for the experiment.

He then took a long, capillary pipette with a teat attached, made a mark about an inch from the end and drew up into it as far as the mark white cells from the sloped surface of the mixture. Then, having allowed a bubble of air to enter the pipette, he drew up an equal quantity of the bacterial emulsion, mixed them well together by blowing them in and out of the pipette several times on to a glass slide, and incubated the mixture at body heat (37°C.) for fifteen minutes. Having once more mixed them well together, he expressed a drop of the mixture on to a slide. With another slide held at an acute angle to the first, he drew out this drop so as to form a film on the first slide. In this way he found that most of the white cells were drawn to the edge of the film as they were larger than the red cells. He then stained the film for the particular bacterium he was working with. In this case no phagocytosis had taken place; the organisms were all lying outside the cells. He then repeated the experiment, but in addition to the white cells and bacterial emulsion, he also drew up into the pipette an equal quantity of blood serum, mixed and incubated and made a film from the mixture and stained it as before. Now, on examination under the microscope, he found that phagocytosis had taken place and numbers of the organisms had been taken up by the leucocytes and were lying within the cellular substance. The white cells and bacteria were common to both experiments, but without the addition of blood serum the cells were unable to phagocyte the bacteria. Therefore blood serum contains some substance which acts on the leucocytes in such a way as to enable them to take up and destroy bacteria. This substance he named opsonin from the Greek ὀφονω, "I make ready for table."

He then went on to experiment with this substance and discovered a fact of great interest and importance; namely, that each microörganism possesses its own specific opsonin. How was he able to prove this? By so saturating a sample of blood serum with tubercle bacilli that, under its influence, leucocytes would no longer phagocyte this organism, and yet the same sample of serum would phagocyte other organisms when mixed with them.

Going further still, he discovered the point which concerns us most in the study of pulmonary tuberculosis and its treatment by means of graduated labour, that the amount of opsonin will not vary in a healthy individual, but in the case of a sufferer from tuberculosis it will. So that white cells under the influence of a tubercular serum will not phagocyte the same number of bacilli in a given emulsion as under the influence of a normal serum. It will be seen at once that this knowledge furnishes us with a very valuable aid to diagnosis. What is necessary in making the experiment with a view to diagnosis is to compare the number of bacilli phagocyted by one hundred cells under the influence of the serum of the suspected person with the number of bacilli phagocyted by one hundred cells under the influence of a normal serum. The ratio of one to the other he called the opsonic index. Thus, if one hundred cells in the case of the suspected serum phagocyte three hundred and ten bacilli, and in the case of the normal serum four hundred and twenty-five bacilli, the index will be $\frac{310}{425} = 0{\cdot}72$.

Now, although theoretically normal should always be at 1, yet, in practice, it is found to vary, owing to the delicacy of the technique, within certain limits. These limits have been taken as 1·20 and 0·80, and anything outside these figures is taken as being at least strongly suggestive of tuberculosis. But, at the same time, it must be understood that one negative observation is of little importance in itself, for all tubercular people will, at some time or other be within normal limits. The best method of procedure is to obtain a sample of the patient's blood while he is at rest, make him then take a walk or some form of exertion and obtain another one or two samples at intervals after the exertion.

Next, it was found that various things affected the opsonic index of a patient. For instance, in the case of a gonococcal joint, massage and movement produced a strong local reaction accompanied by either a rise or fall in the opsonic content of the blood. In the case of a person suffering from pulmonary tuberculosis, it was found that exercise acted in the same way, either raising or lowering the opsonic index. It was further shown in the case of a patient with advanced disease, having a high and fluctuating temperature, that his opsonic index was continually varying, now being raised high above normal, now being much below. A very interesting point to be noted in this connexion is that the opsonic index varies inversely with the temperature, i.e., when the temperature is high the opsonic index will be low, and vice versa. All these points were very clearly shown and proved during the course of our examinations on the bloods of the patients at Frimley and the charts obtained were very interesting and instructive. These various phenomena were given the name of auto-inoculation, and the opsonic index is merely a guide to the amount of protective substances which are being manufactured by the body in response to the stimulus given by the presence of any microörganisms. It is exactly analogous to artificial inoculation by means of tuberculin, but in this case the patient manufactures his own tuberculin.

Wright found that, following a dose of tuberculin, or any vaccine, a certain train of events followed, provided the dose was not too large. Following closely on the inoculation, he noted a lowering of the opsonic index. This he called the negative phase. This was followed in a greater or less time, according to the strength of the dose, by a rise in the opsonic index, which he called the positive phase, after which it gradually returned to normal.

Let us see, then, how this theory of auto-inoculation affects our study of pulmonary tuberculosis and how it can be applied to graduated labour. To start at the point where the patient is lying in bed and still showing a temperature every evening, obviously he is auto-inoculating himself excessively, and his opsonic index is fluctuating and abnormal. To remedy this we require to check the excessive production of toxins. In most bacterial diseases this is a comparatively simple matter to accomplish. All that is necessary is rest, and, in the case of joint disease, immobilization. But it is impossible to obtain for such organs as the lungs, perfect and complete rest. We can, however, do much in this direction by keeping the patient at rest in bed, and not only at rest, but at the absolute rest enjoined in the case of a typhoid patient, that is to say, the patient should not be allowed to move for anything not absolutely necessary. He should be fed by a nurse from a feeding cup, his bed should be made under him, and he should not be permitted to go to the lavatory. It has been proved that under this régime the temperature will return to normal far more quickly than when simple rest is prescribed and the patient permitted to feed himself and get up to go to the bath-room. The reason is not far to seek. The mere exertion of sitting up in bed hurries the respirations and consequently the circulating blood; the blood pressure in the lesion is raised and more toxins are thrown into the blood stream.

Let us now suppose that the period of absolute rest enjoined has been successful and the patient's temperature has returned to normal, thereby showing that his excessive auto-inoculations have been checked and that this has continued for a week or ten days. The lesion is in a state of quiescence, as it were, and the production of anti-body is at least sufficient to cope with the amount of toxin produced by the offending bacteria. But we want to go further than this, and this is where the superiority of graduated labour over all older methods lies. Previous methods stopped short at this point, or at least nothing was done to try and induce the body to manufacture anti-bodies in excess of toxins.

Obviously the next step should be to make the patient auto-inoculate himself, but not excessively; to vaccinate him as it were, so that his tissues may be stimulated to produce anti-bacterial substances in excess of toxins. It has been shown that any cause which hurries the respirations and circulation will do this, so all that is necessary is to give him a very small amount of extra exertion. This is done by allowing him to get up for an hour a day, and this is followed up by the routine I explained before. Each increase in the amount of time he is allowed up, each promotion in the various grades of walking and work gives him the required auto-inoculation, raises his opsonic index again, which has probably fallen towards the end of the previous grade, and makes him immune to larger and larger doses of toxin, until finally he is able to perform the hardest navvy work without any effect on his lesion or on his opsonic index. This latter fact was very strikingly shown in several charts of blood examinations we made on patients at the Brompton Hospital sanatorium. While these patients were on the higher grades of work they showed in all cases very high indices, but on examining their bloods again when they were on the final grade and ready to be discharged, it was found that their indices lay always within normal limits and no amount of exertion would either raise or lower the index. They were, in the true sense of the word, cured. The bacteria in their lesion, if indeed any remained, were so shut off by fibrous tissue from the blood stream, that no toxins were being thrown into the circulation, and in consequence there was no necessity for the production of anti-bacterial products above the normal quantity.

It would be an ideal state of affairs if, at the conclusion of treatment of all consumptive persons, opsonic indices could be taken to see if the hardest work possible had any effect at all on the opsonic content of their blood. If no effect were noted they would be known to be cured, and could be discharged with safety. If, on the other hand, any rise or fall occurred after exercise, further treatment would be indicated, just as in these days a Wasserman's test can be done to determine the presence or otherwise of specific disease. Unfortunately, this is impossible in the majority of cases, and all that can be done is to observe if the hardest work has any effect on temperature and clinical symptoms during a period of three weeks.

The effect of the labour on the indices of these patients at the Brompton Hospital sanatorium was very clearly shown in the course of our investigations on their bloods while performing the work. We first examined their bloods while at the hospital, where no treatment beyond rest was possible. The same patients' bloods we examined again later on, when at work at the sanatorium. In all cases we found low indices while at the hospital, and invariably they were raised much above the normal as the result of graduated labour. Indeed, it was very striking what exceedingly high indices these patients showed after they had been on the work for some time. Another interesting fact came to light about a certain type of patient which had hitherto puzzled us; they were patients with but few physical signs for the most part and in fairly good condition, and their temperatures returned to normal as the result of rest, but always on allowing them to get up the temperature rose again, and this invariably happened. We examined their bloods and found their indices very low, and so we determined to try the effect of more exertion; otherwise, a bigger auto-inoculation. They were put straight on to walking exercise from rest, as soon as the temperature had been normal for ten days. The method was quite successful, and on examining their bloods again we found that their indices had been raised as the result of the extra exertion. There are not many patients of this type, but it is a distinct type. In the same way I found, when I came to the Byron sanatorium, several patients who had been for months in bed whose temperatures would not return to normal. After some consideration I thought they probably conformed to this type and had low indices, and I determined to try the effect of extra exertion. It was successful in every case I tried it on, and brought down their temperatures to normal. These patients have since gone on improving and are now taking walking exercise.

Now, in all this work I have taken the temperature as a guide to the amount of work to be done. Obviously the ideal method would be to take the opsonic index as a guide, but this would entail an enormous amount of labour, more than would be possible at most sanatoria. And when it is remembered that the opsonic index varies inversely with the temperature, the extreme value of this can be estimated.

The danger mark had been fixed at 99° F. in the case of men and 99·6° F. in the case of women. For the first few years of the work any patients whose temperatures reached these points were at once sent to bed and had to re-start the routine from the beginning. But further experience showed that the majority of these cases were not only none the worse for the rise and over exertion leading up to it, but were often actually better for it. The reason for this apparent anomaly is that the dose of toxin produced by the exertion had not been excessive, and in consequence the response on the part of the tissues to the formation of anti-body had been adequate. And so these patients, after a few days walking exercise, were allowed to restart work on the grade in which they were working when they suffered from the temporary set-back. This method has worked admirably ever since. It is not possible, however, to over estimate the importance of the temperature 99° F., for if it be accompanied by headache or feeling of malaise, more stringent measures are necessary. Several sanatoria in late years have inaugurated the graduated labour system of treatment, but, principally because they have not grasped the importance of this 99° temperature, they have not been altogether successful with it.

A case from one such sanatorium came under my notice which illustrates this point clearly. It was that of a patient who had been in the sanatorium in question eight months previous to my seeing him. He had been cutting down trees while his temperature rose every evening to 99° F. and sometimes higher. He was discharged as absolutely cured, having put on five pounds in weight during his nine months stay there. Naturally he broke down again in a very short time, even though he continued to lead an open air life. I then treated him with strict graduated labour principles, and, although it was a long time before his temperature would return to normal, eventually it did so, and at length he was able to dig in the garden for six hours a day without rise of temperature. He put on twenty-one pounds in weight in ten months, and has continued well ever since. This shows well the necessity of lowering the temperature below the "danger point" before we can hope to succeed with graduated labour.

It is not the labour only which should be graduated; the graduation of the rest is equally important, and every hour of the twenty-four should be regulated with extreme care. The importance of this fact was brought home to us in the case of a musical patient who played the piano before he was in a fit state to do so. The result was a rise of temperature to 101° F.

There is another very important side to the graduated labour system of treatment, and that is the mental and moral effect produced. In other methods the patient, having nothing to occupy his mind with, naturally broods over his disease. The work gives him other things to think about, other interests, and so prevents this. Therefore it is desirable to keep him occupied even when in bed, unless "absolute rest" is being prescribed, by allowing him and encouraging him to read, or sew, or make maps and mats, or to knit. Any small "jobs" he is able to do with his fingers should be encouraged. Later on, when at work, the interest provided by that is sufficient, and he will gain encouragement from every upward step he takes in the different grades. He will feel on every promotion, as it were, one step nearer cure, and this cannot but have a beneficial effect on his mental state, and therefore on his bodily condition, too. This is more marked on the grades of work that an any other time. Several of the Frimley patients have written to say they date their real improvement from the time they commenced work, and that they think the hardest work did them the most good.

In such a paper as this it is impossible to give more than the barest outline of the modern outlook on pulmonary tuberculosis, and much remains to be said. The whole subject has been placed, during the last few years, on such a different footing that really our whole study of the disease needs revision. In these days it is clearly seen that the all-important point is to get the patient under treatment as early as possible, and yet it is a fact that the diagnosis of early pulmonary tuberculosis is to all intents and purposes entirely neglected at our medical schools. The importance of making a definite diagnosis at once does not seem to be sufficiently realized either by the public or the medical profession. And so it is that, unless a patient shows definite physical signs with râles and very marked symptoms, too often no further methods beyond the stethoscope are employed. And yet it is certain that once the patient has got to such a stage when physical signs are very obvious and it is a simple matter to diagnose the disease by the stethoscope alone, the chances of recovery are not nearly so great as would be the case if diagnosed earlier. The patients we want to secure are those with indefinite or no physical signs and but few symptoms, and by every means in our power we should endeavour to determine whether they are subjects of the disease or not. For it is beyond dispute that the disease can and does frequently exist without any physical signs at all being discoverable by the stethoscope.

At the same time we should be very careful not to diagnose the disease in the absence of confirmatory evidence, for by placing such a person in a tuberculous institution we put him in the way of infection. It must be remembered to what little cause for anxiety pulmonary tuberculosis in its early stages may give rise. There may be little or no cough, but in this connexion it should be borne in mind that frequently patients deny any cough and yet one may actually hear them, while being examined, give vent to a small "hack." There may be little loss of weight, and all the patient may complain of may be a feeling of indisposition often accompanied by dyspepsia. Naturally the sputum, if there be any, should be very carefully examined, and on as many occasions as possible. I have known of a case in which the sputum was examined seventeen times with negative results, and yet the eighteenth examination revealed the presence of tubercle bacilli. But, as a rule, the presence of the organism in the sputum is a sign of comparatively advanced disease, and signifies the breaking down of lung substance, while a negative result, of course, signifies nothing.

The antiformin method of examining the sputum may be tried, but personally I have never come across a case in which I have found tubercle bacilli by this method when the Ziehl-Neilson method had not revealed them. It is of benefit, however, when the sputum has to be kept some time before examination.

The presence of *any* temperature, 99° F. or over, is very important, and in the case of patients who have had to walk some distance to the place of examination, this will often put us on the right track. Any history of hæmoptysis is of the highest importance, and should be investigated very carefully, for often hæmatemesis, or bleeding from the gums or throat, is put down as hæmoptysis.

Now, all these points will help us greatly if one or more be present, and yet we cannot make a definite diagnosis in the absence of physical signs or organisms in the sputum, and therefore I consider it very desirable in all such cases that one or more of the tuberculin tests should be carried out. True, a negative result does not even then absolutely exclude the presence of the disease, but at any rate the tests enable one to include a far greater number of cases in the category of the tuberculous than would be the case without their aid.

The most reliable of these tests I consider to be the opsonic index, but I would emphasize the fact that one observation in itself is likely to be valueless, as I explained before. But it may not always be possible to carry out this test, for it entails a specially equipped laboratory and skilled workers. Next in importance I would place von Pirquet's cutaneous test, and this can be carried out by any one, as the tuberculin and a scarifier are now supplied by many wholesale chemists. Three spots on the forearm should be selected at intervals of one inch, the middle one taken as a control and scarified first without any tuberculin being applied. The other two should then be scarified through drops of tuberculin as in vaccination for small-pox. If the patient can only be seen once again, the best time is forty-eight hours after operation. A positive result will show itself as a hyperæmia and possibly by exudation and pustulation. Any difference between the control site and the other two denotes a positive result, providing the operation has been carefully performed. The literature on the subject is too scanty and the test too young to enable one to say in what percentage of tuberculous cases a positive result is obtained, but all skilled observers are unanimous on the importance of a positive result, and it is probably invariably reliable in children.

The two remaining tests are Calmette's ophthalmic reaction, and Moro's percutaneous test, both of which have their supporters and their opponents. Calmette's test is said by some to give rise to harmful results and Moro's to be not sufficiently reliable.

Such, then, are all the methods open to us in bringing the sufferers from tuberculosis as early as possible under treatment, and the earlier any particular test decided upon is brought to bear on the patient the greater are his chances of recovery.

In these days, at any rate, we have scientific aids to diagnosis and scientific methods of treatment. Not only that, but we can also discover how far any particular patient is reacting to our treatment, and to what extent it is affecting the anti-bacterial products in his blood. This is a great advance on earlier times. We can now say, too, whether a patient who has been under treatment is cured of his disease or not. In earlier times this was purely a matter of guesswork. In this connexion we must not forget a very important group which has to be made in separating the different stages of the disease. It is the group known as "Arrest + T.B. in the sputum." The existence of this apparent anomaly is beyond dispute, though the explanation of it is difficult to follow. It seems probable that patients in this group would be more liable to relapse, as they carry the danger always with them. It may be, however, that they have required a very high degree of immunity to the disease, and so the organisms, though present, are incapable of doing them harm. An analogous case is that of the "typhoid carrier," and both are probably menaces to the community.

I have not touched at all upon the subject of treatment by means of tuberculin, owing to limitation of space. Much has been written on this subject, and much remains to be written, for there is no doubt that the future of medicine lies in vaccine therapy in all diseases where the offending organism has been discovered. Unfortunately, the tubercle bacillus presents more difficulties for vaccine treatment than other microörganisms. But even so, there is no doubt that it furnishes us with a most valuable aid to treatment, and the ideal procedure would be a combination of sanatorium treatment (i.e., graduated labour) and tuberculin inoculations. There are, too, some cases which will not react to graduated labour until they have undergone a course of inoculations previously. But its chief value lies in treating those cases which for various reasons are unable to leave their work and enter a sanatorium. I myself have been able to treat a case in this way without his ceasing work for a single day, and he was still at his work a year after I had given him the last inoculation, with no return of sysmptoms.

To sum up: The changes which have taken place in our study of pulmonary tuberculosis are as follows:—

1. Earlier and scientific diagnosis both by means of further experience with the stethoscope and by the tuberculin tests.

2. Scientific treatment by means of graduated labour, enabling the patient to return to his former occupation with a reasonable hope of being able to continue at it for years.

3. Scientific experiments which inform us whether a patient is really cured or not, so determining the length of treatment.

4. Scientific treatment by means of inoculations of tuberculin, either as an accessory to graduated labour, or by itself in cases where graduated labour cannot be applied.

THE DIFFICULTIES IN PROGNOSIS IN PULMONARY TUBERCULOSIS

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THE question most earnestly asked to-day, and the one whose answer means most to the patient and his friends, relates to the outlook in the individual case of pulmonary tuberculosis. Yet this question is probably the most difficult to answer. "Nowhere in medicine can it be said more truly that experience is fallacious and judgement difficult than in regard to prognosis in pulmonary tuberculosis. A limited experience often leads one to risk a positive prognosis, but with further knowledge . . . comes the humility of uncertainty."[1]

Considerable has been written on the subject by a number of writers, most of whom have had the best available opportunities for observing the course of the disease under varying conditions. The paragraphs in text-books are largely limited to an enumeration of factors which, if present, exert tendencies for or against recovery. Statistics from sanatoria and dispensaries are available which give a general idea of the way certain classes of cases do, but when the individual case is presented to the physician he has a host of details to seek out and then a heterogeneous mass of information to balance up in his mind. Cases are not uncommon which "do well for a time, then take a turn for the worse," and again, and perhaps repeatedly, change for the better and worse alternately, and this under continued similar conditions. The physician will frequently remember a patient, for whom he has given a favourable prognosis, whose clinical course has suddenly and without apparent cause changed, and the case has failed rapidly; and vice versa. The most we may hope to do, after a complete physical examination and analysis of the whole case, is to give the probable ultimate outcome with an approximate estimate of the time involved. Dr. Gee says: "Never give a definite opinion as to how long a patient suffering from phthisis will live; for the only certainty is, that if you do, you will be wrong."[2]

Read at the clinic at the Orthopædic Hospital, Toronto, November 4th, 1911.

We endeavour to get cases early because they have the best chance of recovery (some institutions absolutely refuse all but those strictly in Turban Stage 1, and some refuse all cases with râles), yet we have frequently followed early cases under treatment and have seen them steadily fail, while on the other hand we have not infrequently watched advanced ones improve and become quite well. In regard to this latter group, not a few have been accepted by this hospital on trial, being so severely ill. So often have we found predictions fail, that only rarely has the writer ventured to give out a definite fatal prognosis and to state the probable time. Even in this type of case all possible means are called to our aid, including a knowledge of the systemic involvement and clinical supervision for a short period, before we venture an opinion as to the probable duration of life. When, however, we are dealing with cases in Stages 1, 2, or what we may call an early 3, the prognosis becomes much more uncertain.

Speaking of the classification of pulmonary tuberculosis adopted by the International Conference of Tuberculosis at Vienna in 1907, embodying what was previously known as Turban's Classification, R. W. Phillip[3] says: "It seems a pity that the stages which this classification admits are solely stages of anatomical change within the lung. Little cognizance is taken of systemic involvement, yet, after all, the prognosis and treatment of a given case are governed by the degree of systemic intoxication rather than by the extent of local change." He suggests a very convenient symbolic representation of both the local and the systemic disturbance by using the symbol "L" for local or lung lesion and "S" for systemic involvement, with small figures 1, 2, and 3 after the "L" indicating the stage according to Turban, and by combining variously capitals and small letters to indicate the relative proportion of local and systemic interference. The National Association classification purports to do the same thing in the terms "incipient," "advanced," and "far advanced." Even with this they add certain qualifications.

In this institution, to aid us in summing up a case and in comparing the relative amount of activity evident by chest signs at successive examinations, we use symbols suggested by Dr. W. B. Kendall. These are small Roman numerals, I, II, III, or IV, placed alongside of the diagramatic representation of the râles present, indicating by "I" that the sounds are heard on inspiration and expiration (ordinarily called large moist or bubbling râles), by "II" thâat the sounds are heard on inspiration only (medium sized drier sounds), by "III" that they are noticed only after cough, and by "IV" that all adventitious sounds are absent. Thus the successive chest charts of a case primarily active and steadily improving to an arrest, would show successive graduation from I to IV. Bonney has said in this regard: "Waiving temporarily a consideration of other elements influencing prognosis, it is fair to assert that the chances for recovery are improved in proportion to the diminution of moisture in the infected area. Prior to its complete disappearance, favourable prognostic indications consist of a reduction in the size of the râles, a lessening of their distinctly bubbling character, and their non-recognition save upon the act of coughing."

Endeavouring to state a more definite prognosis for each individual case upon discharge, the writer has recently set together a series of types of cases as short as may be possible in considering a disease so varied in its clinical course. The series as used at present, after frequent modifications, is as follows:

(*a*) Incipient or moderately advanced cases (when diagnosed) who steadily improve to arrest or cure. Contrast—Incipient or moderately advanced cases who steadily fail.

(*b*) Advanced cases who steadily fail. Contrast—Advanced cases who improve to arrest or cure.

(*c*) Incipient cases who progress and retrogress alternately.

(*d*) Moderately advanced cases who progress and retrogress alternately.

(*e*) Advanced cases who progress and retrogress alternately.

(*f*) Moderately advanced or advanced cases whose chest signs remain more or less active while the symptoms abate somewhat, permitting the patients to lead more or less comfortable and useful lives.

The placing of each case as a certain type is not attempted unless the patient has been under supervision at least one month, and as our term of residence averages four months, we usually have a complete set of data for summary. The full chart of a patient after having been in hospital four months includes:—(1) Nurse's record for the first ten days of temperature, pulse, and respiration of every patient, the first three days of which every patient is at rest in bed. If a new patient's temperature does not rise above 99°F., nor the pulse rate above 100, and if no other contraindication is present, he is up after his third day. (2) Charts of his nose, throat, and ear condition. (3) Complete physical examination. (4) A chart of his chest condition every six weeks. (5) Complete personal and family history. (6) Records of analysis of sputum, urine, and blood (stomach contents when indicated). (7) Weekly records of daily reports under some thirty-four different headings which include almost every possible variation in symptoms; (if a bed patient, there is of course the daily bedside chart). (8) A summary chart which gives the important features of the case in short, definite form.

Flick calls attention to the following points which enter into the prognosis in tuberculosis: (*a*) The virulence of the tubercle bacillus. (*b*) The dose. (*c*) The resistance of the host. (*d*) The coëxistence of other microörganisms. (*e*) The amount of tissue which has been destroyed. (*f*) The duration of the disease. (*g*) The complications arising from toxemias. (*h*) Age. (*i*) Race. (*j*) Social conditions. (*k*) Environment. (*l*) Financial resources. (*m*) Temperament. (*n*) Character.

Most of those just named are dealt with extensively in special works on tuberculosis. Two or three only may be mentioned here.

First, notice that heredity is not mentioned. Of all the factors which were accepted as of vital importance until recently in the prognosis of tuberculosis, heredity or predisposition might as well have spelled "predestination"—and that to an early grave—and it is remarkable how firmly this old opinion is held by the public to-day. Their first comment of surprise when this disease is diagnosed commences: "It was never in our family." As the factors are considered in order of importance now, heredity plays a comparatively small part. It even seems reasonable that one might expect to find increased resistance in children of parents who have reacted to tubercular infection.

In regard to the amount of tissue affected or destroyed, "A limited lesion, even in a more advanced stage, is more favourable than one of wide extent. A sharply defined cavity at one apex is more favourable for duration of life than an infiltration scattered over one to two lobes."[4] Just why cases with limited cavity formation often do better than those with the same or slightly greater extent of less severe local damage, may not be satisfactorily explained. Römer,[5] after a series of experiments with animals, concludes that cavity formation is a sign of immunization and is an indication that the patient or animal has been previously infected. Instances are not uncommon where patients who come to the institution with half a lung involved with some excavation and running moderate fever, show steady and comparatively rapid improvement under the new régime and proceed to an arrest, and occasionally to cure.

Environment should receive particular attention. So frequently do we discover a history of unhappiness at home that we are constantly on the lookout for this worrying factor. Admitting more or less unhappiness in most households, and allowing that prolonged absence from home under kindly associations tends to permit the admission of domestic troubles which otherwise would never be told, domestic infelicity and worry of one kind or another do appear to be very frequent predisposing factors. Dr. F. S. Minns noticed this among the patients at the Toronto Free Hospital for Consumptives three years ago. When, therefore, one is considering the prognosis, the present and future environment must be taken into account. We have kept patients at this institution for months longer than would otherwise have been necessary when we have been aware of an unappreciative household at home. "The fact that some member of the family has visited them during their sojourn at the health resort greatly increases their chances of permanent recovery, for the family, too, then knows what should be done"; but "patients who return to a nagging wife or family should receive a doubtful prognosis."[6]

Where complicating secondary microörganisms can be made out and specific vaccines given, we have seen a slight daily fever abate and the outlook change for the better. Drs. Caulfeild and Beatty have done sufficient work with our patients along this line to consider it a valuable therapeutic asset.

As to the "resistance of the host," either inherent or acquired, little that is definite can yet be said. In answering a patient's question as to prognosis, we can tell him with fair accuracy: first, the amount of his disease, and secondly, what can usually be done with proper care. That is, we can elucidate upon the seed and upon its cultivation, but as to the soil, or the resistance, that remains to be studied by close supervision or possibly by research biological work. Dr. Caulfeild[7] has given us frequent assistance in prognosis by his investigation and interpretation of the biological states in patients of all classes, but particularly in those who seem to progress and retrogress alternately in the course of their disease. He has correctly anticipated by weeks oncoming change in the clinical course where there was no such indication to be seen from careful clinical observation. The practical value of the work of Drs. Caulfeild and Beatty to the clinician studying a particular case of tuberculosis is based upon their conception that "the varying clinical pictures are the outcome of varying biological conditions." Classifications are tentatively drawn by gauging the tuberculin sensitiveness, by utilizing the reaction of complement fixation, and by certain opsonic estimations.

Owing to the possible change in the biological classification in the course of a case, as is indicated more particularly by the reactions obtained with various strengths of antigen and patient's serum, the prognostic value is necessarily limited to a period of time, and these tests must be repeated in following the case and to anticipate any clinical change. Caulfeild states that "it was desired to show the ability for favourable progress or the reverse on the average, in connexion with the duration of the disease and the amount of anatomical involvement." To us who have followed the clinical course of cases used in his investigations, this has been definitely accomplished, and during a period of eight months has been repeatedly demonstrated. In cases where the prognosis from all clinical aspects has seemed especially uncertain, the writer has for months called upon our pathological department for investigation and for their interpretation of the findings.

There is no doubt that we could save valuable time to patients if we knew better how to prognose. Carefully comparing all the known physical and clinical factors which make for recovery, with those tending against it, we can advise as to the real necessity of quitting work and leaving home, we can urge the rigid régime of a special institution, or we can suggest the hopelessness of drastic measures and permit the last weeks to be spent at home. Finally, as to the forces of natural and acquired immunity present in tuberculosis, more or less, as in any infectious disease, how are we to estimate these? As we said above, careful clinical surveillance under conditions of rest or exercise will give us a very fair estimate. When, however, these hidden forces vary in quality or quantity, as they undoubtedly do frequently in the course of the disease, the different state is only made evident when sufficient time has elapsed that it shows clinically. There seems yet no sufficient explanation why a certain proportion of cases vary in their course from time to time while remaining under similar conditions. If it were known of what these hidden changes consist, and by what produced, not only would the prognosis be more evident, but the method of cure would be no secret. "The discovery of diagnostic agents which shall also make prognosis possible will clear up the clinical problem in a very satisfactory manner."[8]

Summary: (1) While the question of prognosis is of utmost importance, it is most difficult to answer. (2) Even with the greatest care in examination and observation, the outcome will sometimes be unexpected. (3) While early cases frequently recover and advanced cases seldom, we sometimes see advanced cases recover and early cases fail. (4) Even in far advanced cases (not moribund), though the ultimate outcome may be correctly predicted, the length of time can only be approximated. (5) Just as in diagnosis, no one sign or symptom should be relied upon, so in prognosis no one indication but all points available must be considered. (6) Aid to prognosis may be had from care in different methods of classification. (7) An attempt to place cases in a progressive, retrogressive, or alternating class helps to make prognosis more definite. (8) The relative importance of factors affecting prognosis having changed, heredity takes a comparatively unimportant place, and environment should be considered more carefully. Secondary microörganisms may be treated by vaccines with improvement, and that unknown quality, the resistance, is the *res maxima.* (9) Laboratory investigation of certain biological states of the blood has indicated the prognosis with a degree of certainty, and has been of considerable value clinically. (10) Counting all the known factors, and utilizing clinical supervision, we can prognose with a fair degree of accuracy. But withal, the patient's own resistance may be misjudged, and if not misjudged, it may vary without apparent cause.

(I wish to express my thanks to Dr. A. H. Caulfeild for his criticism of the first draft of the paper.)

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Here are cited examples representative of the different types of clinical course from a prognostic point of view, as referred to above. These are selected from those cases of which we have records extending over the longest period. The total number of records reviewed was one thousand.

Type "B contrast."

J. K., male, aged thirty-nine. Family history, negative. Past history, negative. Onset, cough off and on for three years, night-sweats during last summer. Admitted to sanatorium November 5th, 1901. Classified according to Turban, Stage III, and according to the National Association, advanced. Physical condition aside from the lung, nothing of value. Anteriorly left lung impairment of resonance over upper lobe and axilla, small moist râles over same area, rhonchi in axilla. Right lung, small dry râles in apex above second rib. Posteriorly, left lung, relative dullness from spine of scapula to base, most marked between level of spine of scapula and angle, moist râles and rhonchi over this area, drier râles in apex and base. Right apex above spine of scapula, dry râles, rhonchi over area above tenth rib. Symptoms moderate, daily sputum two ounces; tubercle bacilli present, patient's weight, one hundred and twenty-two pounds. Maximum temperature, $99\frac{2}{5}$ during first two weeks. During residence patient improved greatly, generally and locally, and on discharge was classified an arrested case. Weight, one hundred and forty-eight pounds. Went to work as letter-carrier and has kept well. Chest examination, August, 1909, gave occasional few fine dry sounds on inspiration in left apex and left axilla, expiration prolonged, resonance impaired below third rib. Examination again in 1911, signs still those of a healed lesion. Patient still working and well, and according to Turban's classification, "a cure."

Type "D."

H. R. D., male, aged twenty-one. Family history of tuberculosis, two deaths, mother and brother. Onset, cold in head and pleurisy, February, 1905, cough, expectoration and night sweats in October. On admission, December 4th, 1905, Turban, Stage II, moderately advanced. Upper half of right lung, moderate dullness, slight retraction, vesicular murmur noticeably impaired, moist and dry râles; lesser changes in left apex. Weight, one hundred and ten pounds. Tubercle bacilli present in expectoration. Occasional slight fever was present during first week. During six months symptoms abated greatly, and patient left the hospital much improved and had gained sixteen pounds.

Readmitted to hospital December 17th, 1908, in much the same general condition as on first admission, but chest signs showed activity over somewhat greater area. During first five months he appeared to improve generally and locally, weight went up from one hundred and twelve to one hundred and thirty-seven pounds, and patient exercised two hours daily. Then for twelve months he failed steadily till in April, 1910, right lung showed active involvement from apex to base, and more also in left lung. Weight reduced to one hundred and seventeen pounds. From November, 1909, to May, 1910, patient was in bed continuously. Temperature ranged from 99° to 103° daily, reducing to 99° to 101° in April, and to 97° to 99° in May. He steadily improved and left July 16th feeling fairly well.

This patient went to Weston Sanatorium till December 1st, 1910, when he returned to us. He was in good general condition, and chest signs showed less activity than at any previous examination. Adventitious sounds, mostly dry, were heard in less than upper half of right lung, none in left. His temperature ranged from 96⅖° to 98⅘°, pulse average 82, weight, one hundred and thirty-nine pounds. Patient remained five weeks and felt splendid. Weight increased to one hundred and forty-five pounds.

Type "F."

J. S., male, aged fifty-eight. Family history, negative. Past history: Dyspepsia since a lad, worse since forty-three, cough off and on since forty-three. At fifty-two had severe attack of so-called bronchitis, lasting six weeks, had cold, cough, night sweats and general malaise; slowly recovered fair health, but has taken great care since then. Night sweats have been frequent. On admission, April 15th, 1910, classified according to Turban, Stage III, according to the National Association Classification "advanced." Site of lesion, right lung throughout, upper half dull on percussion, lower half less dull, râles from apex to base with some moisture. Left lung lesser changes down to fifth rib anteriorly and angle of scapula posteriorly, retraction in both apices, right mostly. Temperature range, 97° to 98⅘°. Pulse, 70 to 90, average 80. Cough, expectoration, indigestion and fatigue moderate, some laryngitis, no other symptoms. Tubercle bacilli present in sputum and numerous. Weight, one hundred and thirty-seven pounds; highest known weight one hundred and forty-eight pounds. Patient remained in residence two months and systemic condition improved rapidly, gained seven pounds, chest signs remained practically stationary. Caulfeild has used the term "refractory" in regard to this case. Patient's exercise while in residence was increased to four hours daily. Could not be persuaded to stay at the hospital, and returned to work as florist. Chest examination, September, 1910, signs same. Had been working four to six hours daily. March, 1911, reported still working and feeling well.

Cases J. K. and J. S. appear as cases No. 1103 and 1875, respectively, in "Investigations in Pulmonary Tuberculosis," published by Caulfeild.

THE SURGICAL ASPECT OF DUODENAL ULCER

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THERE are probably two varieties of duodenal ulcer—the mucous and the callous. The former, as far as our present knowledge goes, is of no particular significance, for I suppose it resembles in appearance the apthous ulcer of the mouth, and does not go below the mucous surface, producing, therefore, little or no induration. I think one may safely leave such a condition to the tender mercies of the physician, for with rest of the stomach and an improvement of the general health the tendency is towards recovery.

When, however, one meets with the true callous or indurated duodenal ulcer, one has to deal with a grave surgical condition, for the cure of which there is nothing in the physician's armamentarium—excepting, perhaps, rest in bed—that is of a curative nature. It is true that symptoms may subside for a time with the healing over of the mucous surface, but the induration remains, so that under a given set of circumstances the ulceration will recur.

The question at once arises as to the cause of ulcer of the duodenum. The mucous ulcer is probably only an evidence of a general condition, whereas the callous ulcer must have some underlying cause in the duodenum itself. It seems to me probable that there must be a number of predisposing causes that, working in concert, produce the condition. I am rather inclined to think that a faulty anatomical arrangement, leading to a condition of intestinal stasis, as described by Lane in the "Kink of the Ileum,"[1] is responsible for many, if not all, of the cases.

You will—perhaps I should say, you may—remember that in the early development of the fœtus the dilatation of the foregut that ultimately becomes the stomach lies with its convexity that is to be the greater curvature towards the vertebral column; and with its concavity—the lesser curvature to be—looking forward, with the pylorus tilted forward. At about this period the bud that is to be the pancreas makes its appearance, and is suspended to the posterior aspect of the upper intestine near the pylorus. Soon now the stomach begins to rotate in such a way that what was formerly its right

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Read at Hamilton Medical Society, May 3rd, 1911.

lateral aspect becomes its posterior surface; by this rotation the curve in the upper intestine is increased and is made to lap about the developing pancreas, which is a fixed organ, and as you will readily see, the duodenum is partially rotated on its own axis, for it has no mesentery to permit of free movement of the tube as a whole.

Then, if you will remember, the duodeno-jejunal fold is also a fixed point, prevented from sagging by the musculous suspensorius duodeni derived from the left crus of the diaphragm. Remember, too, that the duodenum has a large lumen as compared with the rest of the small bowel.

Add to these anatomical facts the additional fact, as found by the Mayos,[2] that 77 per cent. of their cases of duodenal ulcer occur in the male, and add, further, the fact that it is a disease of the active period of adult life. In this active period of adult life a man spends not more than from six to eight hours in the recumbent position; is it not possible then that as we move about upon our daily round the jejunum leaves its position—where it nestles in the left loin—and sags down to a lower level, thus producing an increased obstruction at the duodeno-jejunal fold? This means a damming back of the oncoming contents of the duodenum with, of a certainty, decomposition, and a puddling about of these irritating contents, resulting in engorgement of the vessels and swelling of the mucous lining.[3] Add to this the persistent squirts or jets of stomach contents—as shown by the animal experiments of Cannon and of Pavlow—with its hyperacidity, through the pylorus against an already engorged mucous membrane, and I think we need not look much further for a cause.

This being the case, why then can we not secure complete cure by proper means, such as rest in bed? For the answer to this we must go back to the time when in early fœtal development the duodenum underwent rotation. It seems to me it is likely that in a certain proportion of people some interference occurred at this time to some of the blood supply, and that when the vessels of the duodenum once became engorged a certain amount of varicocity, leaving an ever-present predisposing cause, always remained. I am sure you have all been impressed by the engorged appearance of the vessels of the duodenum when the abdomen is opened in an exploration of these cases.

In my own experience I can find record of only four cases of perforated duodenal ulcer. Of these, three were referred to me in three days by the same physician. Out of the three, one was moribund, having perforated six days previously, and had refused operation. She died a few hours after I saw her. In the other two operation was done within twenty-four hours from the time of perforation, and all recovered.

At this juncture there is one point upon which I wish to lay stress, and that is, the occurrence of pain. The pain is probably worse just before, and for a few minutes after, the peritoneum gives way. As soon as there is an escape from the perforation nature pours out a great quantity of serous fluid, and the pain may, and usually does, subside, because the inflamed surfaces are thus prevented from rubbing together for a time. With this subsidence of pain the physician is prone to plume himself and await developments. If he waits too long the patient will be beyond hope while he is still pluming! In one of the three cases the patient, when I saw him, had a temperature of 98°, a pulse of 72, and was entirely free from pain, but I was so sure of my diagnosis that I went in through the upper right rectus without hesitation and found not only the perforation in the duodenum, but a great quantity of pus and fluid gastric contents in the peritoneal cavity. The perforation was closed with a purse-string of No. 2 plain sterile catgut and a Lembert suture of the same material. Drainage was carried from between the upper border of the stomach and the liver and from Morrison's pouch. The patient made an uneventful recovery.

I have often been asked the question, Is it difficult to locate a perforation? It is if one depends upon the eye alone, but if one depends upon the finger, using the eye for confirmation only, there is little or no difficulty.

As to the non-perforating callous ulcer, if the patient is put to bed and kept there for several weeks, the jejunum drops back into its place in the left flank and the obstruction of the duodeno-jejunum loop is relieved, the engorgement subsides, the ulcer heals, and his cure is attributed to one of many things—abdominal massage, electrical baths, bismuth mixtures, akaline mixtures, acid mixtures, a salt-free diet, a strictly vegetarian diet, or a strictly flesh diet, according to the particular taste of the consulting physician.

If the patient with his "nervous dyspepsia" has learned the lesson of more rest and less work it may be a long time before he has a recurrence of his ulceration. On the other hand, if, when he is pronounced cured he resumes his old habits he soon is suffering again from his old trouble, and will continue so to suffer until he has his jejunum suspended to the posterior surface of his stomach, preferably with an opening between. W. J. Mayo has facetiously remarked that one of the points in the diagnosis of duodenal ulcer is the fact that the patient has had dyspepsia and has had it cured at least nine times.

It is possible, if I am right in my conclusion as to the cause, that merely a suspension of the beginning of the jejunum may be sufficient to bring about a cure, but with the experience of the Mayos, Mayo Robson, and Moynihan, and a more limited experience of my own, I do know that a gastro-enterostomy does cure in a vast majority of cases. I shall therefore continue to use the gastrojejunostomy, by the no-loop method, in the treatment of my cases, until some one else is able to prove that a suspension of the jejunum is all that is required, for my patients at present rebel at the idea of more than one operation if the first fails to cure.

I shall not take up your time by describing the operation in detail. W. J. Mayo has done that, and if one follows his description accurately there will be few failures. There are just a few points in the operation that are worth a passing notice:

1. Get a piece of jejunum as near the beginning as possible.

2. Be sure to have the clamp, if you use a clamp, on a line with the mesentery of the jejunum.

3. Scratch with the point of the knife the midline of the clamped portion of the stomach wall and of the jejunal surface, before placing the first or peritoneal row of linen sutures, in order that one may be sure of the line of incision when the time comes to open the lumen.

4. After you have put in your posterior through and through row of sutures of No. 2 chromic catgut, put in a third row of No. 1 or No. 2 sterile catgut to obviate the possibility of hæmorrhage from the posterior cut edge. This is a part you cannot see at the end of the operation, and to have it safely secured may save much trouble and increase your peace of mind.

5. Secure the anastomosis accurately and without any rotation to the margins of the opening in the meso-colon, and thus prevent the possibility of hernia into the lesser sac.

6. Don't unnecessarily handle the organs, and don't, above all things, pull and jerk at the organs, or damage will be done to the vessels of the mesentery and a fatal issue will be the reward.

The operation is not an especially hazardous one if properly done, and the end results are most satisfactory, 82 per cent. cured and 9·5 per cent. improved The Mayos, to whom the whole profession is indebted for their contributions to a better understanding of this subject, give a mortality of less than one per cent. from gastro-jejunostomy.[4] I have heard surgeons say that the operation is unjustifiable because of the high death rate, and after seeing them do the operation I have felt that they are right, so far as they personally are concerned.

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It is with satisfaction that the profession learn that the Hon. W. J. Hanna will introduce a bill during the present session of the Ontario legislature taking out of the hands of school boards the power to say whether school children shall or shall not be vaccinated. The anti-vaccinationists say that this will mean general compulsory vaccination. If so, so much the better, as Toronto has had quite enough of such judgement as that of a certain member of the Board of Education who seemed to claim for himself a larger supply of brains than the average medical man on the subject of vaccination. We congratulate the Hon. W. J. Hanna, and can only say that in introducing this bill he will have the entire medical profession behind him. The Academy of Medicine, at the meeting of the Medical Section on February 13th, unanimously endorsed the provincial secretary in his latest move.—*Canadian Journal of Medicine and Surgery.*

A CASE OF ACCIDENTAL EXTRA GENITAL SYPHILIS

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THE patient, an eastern physician, aged thirty-six years, on January 6th, 1910, infected himself while removing some venereal warts from the penis of a young man with secondary syphilis. He was holding the penis with the left hand, and cutting the warts off with a knife when the latter slipped, inflicting a slight wound three-eighths of an inch long, with the heel of the knife in the ball of the left thumb. Neither this part of the knife nor the wounded area had to his knowledge, come in contact with the infected tissues. The wound bled slightly, and as an extra precaution against infection he immediately sucked it out and applied pure nitric acid. In a few days the wound had completely healed and not the slightest evidence of chancre ever appeared.

The patient was a strong, robust man weighing two hundred and sixteen pounds. He had never had any previous serious illness except acute articular rheumatism and appendicitis.

Under the circumstances he anticipated no further trouble and continued perfectly well until February 21st—that is between six and seven weeks after the accident. He then experienced slight chilliness, pains throughout the body, with loss of appetite, coated tongue and constipation. His temperature was 102°.

For the next ten or twelve days his temperature ranged from normal in the morning to 101° or 102° in the evening. One night he had severe chills lasting for two hours, his temperature reaching $102\frac{3}{5}$°. As influenza was prevalent at the time he thought at first he was suffering from this trouble. He also had profuse nocturnal perspiration, which he attributed to aspirin which he was taking.

About March 3rd a papular eruption appeared on the forehead, arms, and trunk. He also had pains, though not very severe, in the knees and ankles and behind the right ear. He had become somewhat anæmic and lost sixteen pounds in weight in four weeks. He developed a lump of lipomatous consistency, painful under pressure, in the lower part of the left axilla.

Read before the Academy of Medicine, Toronto, October 10th, 1911.

As the eruption and systemic disturbance persisted he came to Toronto to consult me, March 31st, 1910. At that time he had a fairly generalized, large, papular eruption, the individual papules varying in size from a split pea to a five cent piece, of slightly coppery tint, non-irritable and slightly scaly. The hands, legs, lower part of the thighs, and mucous membranes presented no lesions. With the exception of the mass in the left axilla, the most careful repeated palpation failed to detect any enlargement of the lymph nodes. A Wassermann test by Dr. J. G. Fitzgerald gave a marked positive reaction.

I prescribed full doses of hydrarg. protoiod, supplemented by mercurial inunctions to the point of tolerance. The rash and general symptoms cleared up in about six weeks.

About this time—that is, in May, 1910—though still undergoing the mercurial treatment, his throat suddenly became greatly swollen, very sore, and ulcerated, and the condition persisted for three weeks. Soon after he developed a soft, lipomatous-like mass the size of a hen's egg, tender on pressure, in the right groin, corresponding in situation to the perpendicular set of glands. No other glandular enlargement or lesion of the skin, mucous membranes, or bones appeared at this time.

He improved considerably during the summer, though he did not regain his weight, and was able to do only part of his professional work. About the last of October, 1910, he suffered considerable exposure to cold and wet, following which his left foot and ankle became very much swollen, œdematous, red, tender, and painful. This inflammatory condition involved the whole dorsum of the foot to the bases of the toes and along the outer side. There was also swelling, pain, and tenderness about the right olecranon process. The swelling in the right groin had become reduced to about the size of a walnut. The evening temperature ranged from 99·1° to 100°. He was unable to walk without great pain, his general condition was poor, his weight being reduced by forty-eight pounds.

The most persistent mercurial treatment failed to relieve the joint trouble, so he again came to Toronto, January 17th, 1911, when, assisted by Dr. R. W. Mann, I gave him ·6 mgm. of salvarsan intravenously. Within a few days his whole condition had changed. The pain and swelling in the joints rapidly subsided, the swelling in the groin melted away, his appetite improved, and he began to gain rapidly in weight.

As I left for Europe in February, I did not see him again until August, 1911. He was then in perfect health, the only sign of the trouble being a slight thickening in the right groin. A Wassermann test at this time made by Dr. Bates was negative.

At the time of his infection his wife was two months pregnant. In August, 1910, she gave birth to a perfectly healthy child. Neither the mother nor child have ever shown any trace of the disease.

The case has presented so many points of clinical interest that I have described it in detail. In the first place it shows the possibility of a general syphilitic infection without any local lesion (chancre) developing. Though this possibility has been recognized in ordinary cases of syphilitic infection, corresponding to cases of *general* infection by other pathogenic organisms with little or no local reaction, yet it is unusual to have a case in which the demonstration is so clear as in this one.

Again, the absence of chancre, glandular involvement, and the occurrence of chills, etc., suggest that a direct blood infection occurred—a genuine, primary septicæmia, which probably explains the extreme severity of the case. It has long been recognized that the severest types of septicæmia are those in which the local defensive processes at the point of infection, either fail or the reaction is slight.

The danger of infection to the mother and child was a matter for serious concern, as the doctor had not at first thought himself to have been infected, and had consequently taken no precautions before the onset of the acute symptoms, over six weeks after his inoculation. The absence of the usual lesions locally and on the mucous membranes probably explain the wife's escape from infection.

The question of hereditary transmission of syphilis is one of much interest, and had an important bearing on one's opinion as to the prognosis in this case. Three methods of possible infection of the offspring are recognized, the relative frequency of each being still in dispute: (1) The father suffering with active syphilis may transmit the virus directly through the spermatozoon. This is by many authorities considered the most frequent method. It is, however, well known that an actively syphilitic father may beget a healthy child. (2) The father may infect the mother with syphilis, and the latter transmit the virus either through the blood (probably the rarest method) or indirectly, through the occurrence of syphilitic lesions in the placenta, which Andrews (Power and Murphy's "System of Syphillis") considers the most frequent of all modes of hereditary transmission. (3) The father may transmit the virus to the child, and the mother remain apparently free from the disease. However, according to Colles' law the mother is immune from infection in suckling her own syphilitic child, thus showing her reaction against the syphilitic poison. In the present case, the father being free from the disease at the time of his wife's impregnation, the first and third methods of infection above described, were excluded, the only danger being from infection through the mother, but she happily also remained uninfected.

This case emphasizes the rapidity with which general infection may occur after a wound has been inflicted, and the ineffectiveness of local disinfection even when applied almost instantaneously.

The striking therapeutic value of salvarsan in a case resistant to heroic mercurial treatment was well demonstrated.

Case Reports

CHRONIC COLITIS

THE following case of chronic colitis is reported because of several very interesting points in the clinical history and in the results of the treatment administered. The patient is a young man, a student, aged twenty-five, slight, small, and very thin. Habits are regular and very temperate; he uses tea slightly, but no coffee, alcohol, or tobacco, and has had no venereal troubles.

Family History. Mother alive and well, aged fifty-two; had severe diarrhœal attacks at age of eighteen, lasting for over a year, very similar in nature to those of patient. She has had none since. It might be noted here that in physique and in mental and emotional temperament patient is very similar to the mother. Father alive and well, aged fifty-seven; has had a history of digestive disturbances since he was a youth. Sisters, three, alive and well. One sister has diarrhœal attacks if she eats an orange daily for two or three days. Brother died at age of twelve, of meningitis.

Previous History of Patient. Was first-born, instrumental delivery. Was healthy baby up to thirteen months, then, while teething, had a very severe attack of ileocolitis lasting two months. Was well from then until three years old, when he again had ileocolitis, while teething, attack lasting three months, with twelve to fifteen stools per day. During childhood had measles, chickenpox, whooping-cough, and bronchitis. He had no other illnesses until the age of seventeen, when he contracted dysentery during a summer holiday, by drinking foul well water, and was very ill for four weeks and had a very slow recovery. Was well from then until present illness began about seven or eight months later.

Present Illness. The present illness dates back to about seven months after the attack of dysentery, and when the wisdom teeth started to erupt, when diarrhœal attacks began to occur and became more and more frequent, finally being separated by intervals of only a few days. These attacks varied in duration from a day to a week with stools ranging from three to twelve daily, and even in the intervals between them the movements of the bowels were not perfectly normal, and stools were only partially solid and had increased mucous content. This condition has persisted for six years now, the patient affirming that he has never gone longer than four weeks without a recurrence of the trouble, no matter what treatment he received.

The symptoms have been constant throughout, each diarrhœal movement being preceded by chills and hot flushes, and by feelings of a vague uneasiness in the intestines, which the patient soon learned to recognize as an aura. In ten or fifteen minutes after this there would be severe griping pain in the abdomen, usually a little above the pubis, sometimes round the umbilicus. When this occurred the patient was forced to go to stool immediately. Movements were accompanied by much pain, bearing down and tenesmus, with a feeling of dissatisfaction in the bowel afterwards.

Stools were soft, pasty, variable in colour, usually nearly odourless, rarely foul smelling. There was much slimy mucous intimately mixed with the fæcal matter and often the fæces were finely shredded and fairly fluid. When attacks lasted more than a day fresh blood would appear in small patches, increasing in amount with the duration of the trouble.

In spite of this constant drain on the patient's strength he remained quite active and muscularly strong, and the state of the digestion was passably good. Occasionally there was gastric indigestion with retention of food, flatulence, eructations, and hyperacidity. When the gastric contents passed into the intestines they were productive of diarrhœa.

Apart from these attacks of acid dyspepsia, diarrhœa always had its origin in some food ingested. These foods caused the patient no discomfort or indigestion in the stomach or small intestine, but seemed to exert an irritating and purgative action in the colon. Foods found to exert this action were all in that class which are looked upon as mildly laxative and prescribed in the diet of persons habitually constipated, such as thin soups, all kinds of raw fruits, and apples cooked, also substances with vinegar in them.

These substances always caused a great increase in the mucous content of the stool, and a great increase of peristalsis, shown by the appearance of bismuth in stools in twelve hours after administration by the mouth, while in intervals between attacks it did not appear until from twenty-four to thirty-six hours.

Associated with the attacks above described were others which showed an aggravation of all the symptoms already mentioned. These began by the skin becoming cold and white, the extremities very cold, with the pulse small and somewhat fast, and in a few minutes patient would feel faint and nauseated, and could feel and describe accurately the passage of bowel contents through the transverse and descending colon. There would now be a sudden, very fluid, watery evacuation, containing little fæces. The patient used to feel very exhausted for a short time after such an attack, then the skin and extremities became warm again and muscular strength returned.

The severe watery flux above described was only produced in one way and always occurred after the ingestion of oranges, grape fruit, or even the juice alone from these fruits, and by lemonade, in other words the presence of citric acid seemed necessary for its production. The eating of one orange or drinking of a glass of lemonade brought on one of these attacks in less than twelve hours. The symptoms at these times all pointed to congestion of the visceral blood vessels accompanied by a great diffusion of water into the colon, as shown by the resulting watery flux.

These attacks were so much more severe than the ordinary ones, the character of the stool was so different, that it is warrantable to class them separately, and they depend absolutely for their production on substances which have as their common character the presence of citric acid.

PHYSICAL EXAMINATION. General condition: Patient thin, but muscular, strong, active, 5 ft. 2 in. in height, weight one hundred and three pounds. Circulatory, urinogenital, and nervous systems apparently normal. Respiratory system, normal. Chest expansion, four and one-half inches. No trace of tuberculosis. Alimentary system: results of physical examination are mostly negative. There is no gastroptosis, no enteroptosis, no dilation of the stomach, no tender spots in abdomen except when diarrhœa is severe and prolonged, when the transverse colon becomes tender, especially at a point just over the umbilicus. Blood examination: Red cells, 4,500,000; hæmoglobin, 90 per cent.; white cells, 8,000; clotting power is below normal.

DIAGNOSIS. Before the patient came under my care, intestinal astringents and antiseptics had been administered, always with success at the time, but with recurrence of the trouble later. To treat the colitis, strict attention was paid to the diet; every article of food found to cause indigestion or diarrhœa was forbidden. The diet was thus restricted to milk soups, custards, corn-starch puddings, rice, sago, tapioca, white bread, toast, beef, veal, lamb, fish, potatoes, carrots, cabbage, turnips, and fruits only when cooked. Drinking milk instead of water was employed with good effect. This had to be discontinued after six months, however, as it began to produce indigestion. When diarrhœa occurred the milk used was boiled first and taken hot, seasoned with a little butter, salt, and pepper.

As medicinal treatment, bismuth subnitrate in small doses, 5 to 10 grs. four times a day, was employed to decrease gastric acidity and intestinal peristalsis, and 10 minims of castor oil were given nightly as an intestinal antiseptic. Opium was used only during the more severe attacks, being avoided in all the milder ones, which were easily controlled without it. When ulceration occurred high enemata were administered, using water medicated with glycothymoline or with hamamelis water. Cod liver oil has been taken steadily.

The result of this treatment has been to greatly improve the patient's condition in every way, and diarrhœal attacks are now slight and at rare intervals. The condition has been a very obstinate one to overcome, and this treatment has been employed over a year now. Even yet it takes very little indiscretion in diet to produce some looseness of the bowel, warning the patient of his mistake.

The treatment of the vascular trouble associated with the colitis has been very successful. It was based upon the following facts. The watery flux occurred always after the ingestion of any fruit or fruit juices containing citric acid, such as oranges, grapefruit, lemonade, lime juice; and attacks would last for a day or two. Patient seemed not to regain quite the condition previous to the attack, but was more susceptible to the next one. Now, citric acid is known to diminish the coagulability of the blood and to remove calcium salts from it, and the coagulability of the blood was low in this patient, showing thus a deficiency in its calcium content. Might not this disorder be due to some disorder of calcium metabolism? Administration of calcium raises the coagulability of the blood, and also exerts an influence on the intimal endothelium of the vessels, whereby the serous exudate from the vessels is diminished. Knowing these facts, I determined to try the efficiency of treatment that would increase the amount of calcium in the blood. This was one reason for prescribing the drinking of plenty of milk. To immediately raise the blood's calcium content I prescribed for four days 15 grains of calcium carbonate (precipitated) three times a day. After an interval of about ten days calcium was again administered for three days. The carbonate will be converted in the stomach and duodenum into the chloride, thus helping to diminish acidity. The chloride formed will be absorbed, just as if administered by mouth. That it actually was absorbed is proved by the fact that the coagulability of the patient's blood increased, showing increase in amount of calcium in the blood, and was soon normal. Syrupus calcii lactophophatis was prescribed for a month following this. The result has been an entire absence of any more of these severe watery fluxes from the colon. The patient also noticed freedom from excessive sweating often complained of, and probably was relieved by limiting of the transudate. To test the result the patient was asked to eat an orange. It had no laxative effect whatever. A second, eaten next day, caused a slight looseness of the bowels; one eaten every night for nearly a week caused at the end of this time one of the severe watery evacuations again, but no more. Calcium was again administered, and for some months there has been no more of this kind of attacks. At occasional intervals, if there seems to be any tendency to a return of the old symptoms, a few doses of calcium and a week or two of using syrup of calcium lactophosphate will effectively banish the trouble.

Perhaps to many men the above reasoning will not appeal as a complete explanation of the results obtained, and they will call the treatment merely empirical. It is at least possible, but in order to prove it a complete investigation of the patient's calcium metabolism under varying conditions would have to be made, including total estimations of calcium content of the food, fæces, urine, and blood, entailing a large amount of work which I am at present unable to perform, so that these conclusions must of necessity be left theoretical. There is in my mind, however, no doubt that there was some derangement of calcium metabolism responsible for the phenomena I have described.

In conclusion I would call attention again to the most interesting points in this history, the history of diarrhœal attacks in the patient, each attack beginning during a teething period, the presence of two separate complaints in the last illness, the one complicating the symptoms shown by the other, the evident relation of citric acid and calcium salts to the vascular disturbances in the colon, and the fact that one of the patient's sisters shows similar disturbances when eating oranges or taking lemonade at more than rare intervals, and also that the mother had at the same age as the patient, a year of severe and inexplicable diarrhœal attacks somewhat similar to those of the patient. These latter points might lead to the supposition of an inherited idiosyncrasy in regard to the metabolism of the calcium salts in the body.

James Crawford Watt, M.D.

Toronto.

CHONDRODYSTROPHY

THE earliest published record dates back to 1791, when Sommering gave an account of post mortem appearances of a case of fœtal abnormality which he was unable to classify, but, from his description, there was no doubt left as to the nature of the condition. Many articles since this have been published on the subject, but the most extensive work was that done by Kaufman in 1892. A number of the contributors described their cases under various names, more especially the earlier writers. As their classification of the disease had not been decided on, the abnormality which was most mistaken for chondrodystrophy was that of rickets. Many investigators claimed these cases to be illustrations of intra-uterine rickets, and on more than one occasion were referred to as cases of fœtal cretinism.

In 1878 achondroplosia was the name suggested by Parrot for a rare condition having some of the peculiarities both of fœtal rickets and cretinism, but this title was not agreed on, as it gave one the impression that there was an absence of growth of cartilage cells, whereas there is, on the contrary, plenty of cartilaginous activity, but not in the direction of increasing the length of the bones; while, on the other hand, Kaufman's proposed name of chondrodystrophy was much to be preferred. It has been suggested that the German dachsund is an example of the same disturbance in the animal, while in the British Museum there are a number of earthenware figures represented as dwarfs with big heads, crooked legs and long moustaches to which Parrot gave the name of achondroplosia; these represented various gods of the time.

Regarding the ætiology and pathology little is yet known. Syphilis has been suggested as a possible cause for this disorder, as for many others, but no direct relation has yet been established. Difficult labour has also been blamed.

Bosch has done considerable work on the physiology of the thymus, which would make one believe that pathological conditions could be held responsible for the changes in chondrodystrophia. He has shown that the bony changes present in thymectomized animals were not unlike those present in chondrodystrophic patients. He says: "The bone disturbances of the operated animal manifested themselves chiefly in the long bones, which, however, were

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Read at Pediatric Section of Academy of Medicine, Toronto, November, 1910.

not equally affected. The rear extremities usually showed more marked changes than the anterior ones. The tibiæ and femora showed the most intense changes, then came the humerus and the bones of the forearm. In general, the ribs, as also the carpal and tarsal bones showed few changes. The growth interference took place invariably at the epiphyses of the long bones; the appearance and normal increase of the centres of ossification were delayed. Microscopically there were marked changes in the number and disposition of the cartilage cells, which resembled much those seen in the ends of long bones in chondrodystrophy fœtalis. The bone changes were most prominent in the zone between epiphyses and diaphyses where bone growth chiefly occurs." In the human the anatomical changes may be briefly summarized as follows:

(*a*) The essential change is located at the junction of the epiphyses with the diaphyses; at this point the cartilage cells are larger and more spherical, whilst the columnar arrangement is entirely absent and there is no attempt at the formation of the primary bone areola.

(*b*) Along with this there is a fibrous ingrowth of the periosteum between epiphyses and diaphyses, so that all possibility of cartilage developing into bone is thus prevented, and occasionally the diaphyses fails to unite with the epiphyses.

(*c*) Simultaneously with these alterations there is a premature synostosis of the basi-occiput and sphenoid, so that the growth of the base ceases and the depressed bridge persists. Bones developed from membrane are not affected, as the spine, sternum, clavicle, etc.

(*d*) The epiphyses increase from the perichondrium irregularly and even excessively, and this gives rise to the laxity of the joints, while in some instances there is an excess of periosteum layed down on the shaft.

The case to be described is that of a girl of nine years of age having a negative personal and family history, with the exception that she had been brought up on the proprietary foods. The present condition was noted at birth, when the mother observed the arms and legs to be much shorter in proportion to the trunk, and in addition that both feet were clubbed. Aside from her being a little backward in cutting her teeth and having her feet corrected, there was nothing eventful in her previous existence.

At present she is, and has been, mentally quite bright, and goes to kindergarten, although the mother says she thinks the child is not as bright as she should be. Her appetite is good and her bowels quite regular. Her height is 28 inches and her weight is 26 pounds.

The general appearance is that of a dwarf with the head somewhat larger than the normal and the extremities much too short in contrast to the length of the trunk, the centre of the body being 5 inches above the umbilicus, thus stunting the figure in a somewhat asymmetrical fashion, which is quite different from other varieties of dwarfism; in fact, the arms are so reduced as not to be able to reach to the hip, while, in addition, there is marked lardosis, with prominent abdomen, scoliosis, bending of the ribs, formation of Harrison's groove, and easily recognized epiplyseal enlargements. The hands are quite typical, spoken of as the "trident hand." In addition, she has prehensile toes and thumbs. The right leg is in a condition of genu valgus, while the ligaments of all the joints are quite lax.

In a few points this case is seen to differ from other cases reported in that there does not appear to be an excess of adipose tissue or any marked increase in the size or shape of the head, while the bridge of the nose is not depressed. The case, in spite of these deficiencies, differs from rickets and cretinism—from the former by the fact that the condition was present at birth, and from the latter by the apparently little affected mentality and measurements.

Toronto. ALAN G. BROWN, M.D.

EPITHELIOMA OF THE PHARYNX

M. Mc. F., seen November 16th, aged seventy-two. A plasterer by trade, but owing to ill-health he had been unable to work much for over a year. Six months ago his throat became sore from the gradual development of a tumour on the left side. It had been growing ever since, impeding, but not preventing, the swallowing of food, and causing stinging pains up towards the ear. He would take his meals regularly, but with difficulty. Slept fairly well.

EXAMINATION. Had a large growth filling up left side of pharynx. It included part of the soft palate, the whole of the tonsil, both faucial pillars, the side of the tongue, and had also an attachment down the post-pharyngeal wall. The outside glands did not seem to be seriously affected, although slightly enlarged.

Believing it to be a case of malignant disease, as the man was still in a fair condition physically, I concluded that it was operable; but that it should be done intra-pharyngeally, and without delay.

On November 17th, the following day, he was placed in the Western Hospital and an anæsthetic administered. At my request Dr. Beatty then tied the left common carotid in order to more effectually control the hæmorrhage during the pharyngeal operation. This was done under æther, chloroform being at once substituted for the latter operation, without the patient returning to consciousness.

I then dissected out as far as I could the body of the growth, using a long, curved bistoury. There was still much bleeding. Owing to this, and to the impossibility of opening the mouth widely, I did much of the cutting without vision, guiding the knife by inserting a finger of the left hand into the throat. After removing the main part of the tumour by clamp, I proceeded to burn the bases all round very deeply with the electro-cautery.

The suffering of the patient was not very severe after the operation. He was put to bed and for some days kept on milk diet.

Microscopical examination of the tumour confirmed the diagnosis of epithelioma.

On November 18th I removed with forceps and scissors a number of cauterized sloughs and excised, under ten per cent. cocaine, the segment of the growth which bound the tongue to the tonsil; also another segment from the lower post-pharyngeal wall. All these parts were then freely cauterized, as well as the affected portion of the soft palate.

November 20th, under cocaine, electro-cautery knife was again freely applied where needed.

November 22nd. Electro-cauterization repeated.

Up to this time and from then until now the throat has been freely sprayed every few hours; and latterly much soft food has been taken as well as milk.

On November 29th, one week after the last burning, the electro-cautery was used again, as suspicious granulations had developed over the base in the tonsillar region. Since then, five days ago, there has been no further operative treatment. The patient feels well, has a good appetite, is taking ordinary food, there is very little soreness of the throat, and the pains in the ear have disappeared.

There are still some spots which need watching, and I purpose keeping the patient in the hospital for some weeks yet, and cauterizing as frequently as conditions may require.

On the second day the temperature rose to 100°, sinking to normal, and rising on the fourth day to 99°. Since then the temperature has never been above 98⅗°, usually running between 97° and 98°, notwithstanding the cauterizations.

Toronto. J. Price Brown, M.D.

Editorial

DOMINION REGISTRATION

THE legislature of Quebec has passed the "enabling clauses," giving effect to the Canada Medical Act so far as the Province of Quebec is concerned. Eight of the nine provinces have now passed the necessary legislation. The only province which has not taken action is Ontario. The necessary legislation passed the British Columbia legislature at the present session. The Ontario Medical Council is also in favour of similar action through its legislature, and is now seeking to have a bill passed at the session which has just opened.

If Ontario takes the expected action, a meeting of representatives of all the medical councils of the Dominion will be convened at Ottawa during the coming summer or autumn, when the Dominion Medical Council, authorized by the Canada Medical Act, will be formed. It is confidently expected that Ontario will be in line before the summer, and there will then be nothing in the way of giving effect to what has long been known among the medical profession as the "Roddick Bill." In fact we are informed that the draft of an Act has been submitted by the Ontario Medical Council to the attorney-general, which will in due course be placed before the council, and if approved will be embodied in a bill. In that case its passage would follow automatically.

The bill aiming at the establishing of one set of examinations and one standard of qualifications for the practice of medicine in Canada, in place of the different examinations and varying standards of the individual provinces, was introduced in the House of Commons by Dr. Roddick in 1902, then representing St. Antoine Division, Montreal. The bill was passed, but owing to objections raised to certain features by provinces jealous as to their existing rights, it was found impossible to give effect to the Act.

About two years ago a meeting of representatives of the provincial medical councils was held in Montreal, when Dr. Roddick succeeded in securing the consent of all to certain amendments which he proposed to the original Act. These amendments, removing earlier objections, were embodied in a bill which was passed at the 1911 session of the Parliament in Ottawa. It is part of the Act as it now stands that the provinces give their assent to the principle of the Act through a bill passed in their own legislatures and it is this step which has now been taken by all the provinces save one.

When the Dominion Medical Council is finally formed it will be possible for a physician, having passed the examinations prescribed by it, to practise in any province of Canada, instead of, as at present, only in the province or provinces where he has satisfied the requirements of the respective provincial medical councils. The Dominion Medical Council will have full authority over the purely professional subjects, while the provinces will probably exercise authority over the non-professional subjects of the examinations.

Dr. Roddick has occupied himself for fifteen years or more with this business, and it must now be a matter of great satisfaction to him that his unremitting labours on behalf of the profession are crowned with success. So soon as all the provinces have consented he will feel that his work will be at an end, as the Minister of Agriculture, according to the terms of the Act, will undertake its operation.

THE INSURANCE ACT

IN a recent number we took occasion to discuss the effect which the Insurance Act in England would have upon the practice of medicine and upon the status of the poor. Fear was expressed that, if the public paid by compulsion for the treatment of the poor, charitable persons would be disposed to allow the support of hospitals to come from the public funds. The Insurance Act extends practice by contract to some nine million persons, with the effect that a part of the profession is to be badly paid for doing what all have hitherto done cheerfully for charity.

These fears are being realized, although payments under the Act do not come into force until July. Mr. Sidney Holland, the president of the London Hospital, has drawn attention to the effect which the new provisions are having on that great charity. At the moment, he says that people, alarmed at or indignant with the Insurance Act, are withdrawing and threatening to withdraw their subscriptions. Mr. Holland points out several contingencies that may arise. It may be that the Act will relieve hospitals of some of their patients; but it may be, on the other hand, that the numbers to be treated will increase, because attention to health and sickness will be further concentrated.

As a matter of fact, the new regulations will have no value to the poor who are suffering from serious illness, with the single exception of tuberculosis. The Act guarantees to the insured, skilled medical attendance at their homes only for minor illnesses which require no skilled nursing and no specialized medical treatment. The Chancellor endeavoured to console the hospital authorities by saying that they could refuse help to the poor. But Mr. Holland quite properly points out that they can now refuse to help the poor if they choose to do so, but that hospitals exist for the sake of helping and not of refusing to help.

In the meantime, the campaign by the profession against the Act still goes on. A conference was held on February 5th, under the joint auspices of the National Liberal Federation and the National Insurance Company, at which the Chancellor reviewed the whole situation. The socialist doctors were also taking a hand, and they have passed resolutions that opinion in the medical profession and amongst the general public is not yet ripe for a nationalized medical service; and that the Act must inevitably lead to the public management and control of the voluntary hospitals.

When this state of affairs comes about, a spirit of charity will be replaced by a cold, official atmosphere. When physicians become civil servants, those who are peculiarly adapted for healing the sick will be automatically forced out of the service and into private practice. The rich will be the gainers and the last state of the poor will be worse than the first.

HOUSEWIFERY

THE Department of Agriculture in South Africa publishes a journal in English and Dutch which is disseminating a great deal of useful and practical knowledge in scientific agriculture. During the last few years in South Africa, agriculture has been making great headway. Quite a large number of shows are held yearly in the Transvaal Province, Cape Province, and the Orange Free State Province.

A great deal of enthusiasm is being displayed by the Bee-keepers' Association over the new method now being taught of keeping bees. The old-fashioned method heretofore in vogue consisted largely in turning out a mixture of comb, brood, and dead bees, which was sold as honey at a nominal figure.

Household science is also rapidly taking a prominent place in the educational system of girls. The Household Science Committee in Pretoria, presided over by Lady Von Boeschoten, expect soon to build a school of household science in connexion with the National College of Agriculture. A "million shilling fund" has been started by the president towards defraying the cost of building.

A Housewives' Association has lately been started in the city of New York, for the purpose of protecting the housewife against the tricks of trade, all uncleanliness in the handling of foodstuffs, and the unsanitary conditions existing in many of the shops. No doubt that old Florentine, Agnolo, had he been living in this century instead of in the early part of the fifteenth, would have fully agreed with the object of the Housewives' Association, and that exemplary housewife of his would have taken a leading part in the association. "Every wife," he says, "should know how to cook and prepare the best dishes, and to teach them to the cooks." Living in the midst of "internal conflicts which showed not only in the public square and public palace, but which convulsed" every alley and street in Florence, Agnolo conducted his business and his household as if he were living in the most peaceful times. So well-ordered was his house that at all times it was the resort of all the kings and popes who at that time were constantly visiting Florence. The *donna mia* of this well-ordered household had thoroughly learned her lesson in household matters. Economy and good management prevented waste. Agnolo defines economy as follows: "Economy does not consist only in saving and sparing, but also in using everything when there is need for it."

Sanitary science was not thought of very much in the fifteenth century, and yet in the advice given to his sons, he urges them when choosing a house to see that there is plenty of fresh air about the house. "There are," he says, "near Florence, many places in the purest air, in a pleasant country, with beautiful views, rare clouds, no bad winds, and good water; everything wholesome, pure and good . . . try to get possession of one of these." Work, exercise, and cleanliness are some of the chief points he impresses upon his sons. "Exercise," he says, "preserves life, kindles the natural warmth and vigour, carries off superfluities and evil humours, fortifies the body and the nerves, is necessary to youth, useful to the aged. He who takes no exercise can never live a cheerful and healthy life."

Messrs. Mulford and Company have issued as Working Bulletin No. 6, revised to January, 1912, what is the most complete abstract we have seen of the history and present status of vaccination against typhoid. It contains in fifty pages a complete record of the various steps by which the present position has been arrived at. The experience in the various armies of the world is recorded from the proper authorities, and an abstract of the results in civil practice sets forth clearly that aspect of the case. A complete bibliography adds to the interest and value of the Bulletin.

The bill which was introduced in the Canadian Senate by Senator Scott to lessen the danger from typhoid had much to recommend it. One of the clauses of the bill which made it an indictable offence for a physician to neglect to report a case of typhoid was considered to be too drastic. The bill also provided a heavy penalty upon any one who deposited excreta in any other manner than by treating it with an efficient disinfectant, or burying it at least three feet in the ground, and at least three hundred yards from any stream, lake, or waterway. It was considered that public opinion was not yet in favour of so radical a treatment of an undoubted evil, and the bill was voted upon in the negative.

A curious case was tried in Vancouver before Judge Clement on February 5th, and judgement was rendered against a physician for the sum of twenty-five hundred dollars. It appears that a man named Adams sustained a fracture of the leg, and the physician who was called placed the limb in plaster as a measure of first aid. The patient was sent to a hospital, where it was presumed that the bone had been set, and nothing further was done. It was only some weeks later it was discovered that the application of the plaster was merely a preliminary measure, and judgement was given in favour of the patient as stated.

For the first time in its history of fifty years, the fifteenth International Congress will be held in the United States, September, 1912. Representatives from twenty-four foreign countries and from practically every state and territory in the United States expect to be present. The greatest exhibition on public health ever held in the United States will be shown in connexion with this Congress. The exhibit will consist of eleven groups. Dr. Joseph W. Schereschewsky, of the United States Public Health and Marine Hospital Service, will be in charge of the exhibition.

Dr. Carl H. von Klein, of the John Crerar Library, Chicago, has ready for publishing a translation of the "Ebers Papyrus." He has spent twenty years upon the task, and now only awaits the completion of the subscription list. The book will consist of six hundred and fifty pages, and will be printed in colours. The venerable author is bringing out the work at his own expense, and asks for a few additional subscriptions of five dollars each to enable him to finish his life work.

Hardships endured by the settlers in the far north-west were dwelt upon by Mr. Peter Gunn, member for Lac Ste. Anne, in a speech in the legislature of Alberta on January 30th, when the question of voting the sum of $91,000 for hospital and public health was under discussion. The member for Lac Ste. Anne declared that there was a crying need for skilled medical men in the remote rural districts. In his own district, Mr. Gunn said, there were ten or fifteen post-offices, but not a single medical man accessible. Mr. Gunn called on the government to guarantee medical aid to those pioneers who blazed the trail. Premier Sifton promised that the government would take every possible means to solve the problem.

Book Reviews

TEXT-BOOK OF MEAT HYGIENE. By RICHARD EDELMANN, PH.D., authorized translation by JOHN R. MOHLER, A.M., M.D., and ADOLPH EICHORN, D.V.S.; with 152 illustrations and five coloured plates; second edition; Lea & Febiger, Philadelphia and New York, 1911.

Dr. Edelmann is professor at the Royal Veterinary School of Dresden. Dr. Mohler, one of the translators, is chief of the Pathological Division of the United States Bureau of Animal Industry, and Dr. Eichorn, the other translator, is senior bacteriologist in the same bureau. A book which is produced by three such high authorities must be fundamentally thorough. It is the standard in the United States, where a thorough system of inspection of meat is carried out at an annual expenditure of three million dollars. It is quite impossible to imagine any person, who has to do with the inspection of cattle or of meat, being without this book. It appears to us to be absolutely final upon the subject with which it deals.

EDUARD KAUFMANN, LEHRBUCH DER SPEZIELLEN PATHOLOGISCHEN ANATOMIE FUR STUDIERENDE UND ARZTE. BY DR. EDUARD KAUFMANN, Professor of General Pathology in Pathological Anatomy, University of Gottingen. Sixth edition, revised and enlarged. Berlin, Reimer, 1911.

It is surely a work of supererogation to recommend Professor Kaufmann's well-known work to pathologists or physicians interested in the pathology of their subject, although we seize this opportunity to congratulate the author upon his achievement, and to welcome this new edition which has brought its predecessor up to date.

We note from the preface that it contains close upon 3,000 new references to advances made since the last edition, published in 1909, went to press, and that several chapters have been completely re-written, viz., those sections upon thymus, thyroid, blood parasites, testis, mammary glands, prostate, adrenals, and hypophysis, on scrofula, cervical fistula, and cutaneous mycosis. Changes have been made in the sections upon the tumours of lymph and blood-vessels, lungs, pleura, and salivary glands. The work has thus been brought practically up to June of this year.

Professor Kaufmann possesses to a remarkable degree that capacity possessed by the late Professor Zeigler, of going over new data and concentrating their essences into a few words. It is this gift which makes this work so indispensable to all workers in pathology. But over and above the contents, we recognize material advance in the form of the work. In the first place, the employment of glazed paper with good type greatly improves the illustrations which, it may be added, are almost wholly from the original volume by the author. In the second place, the publishers (we think wisely) put out the work in two volumes, each of some 650 pages, so that the work is easy to handle in contrast to the huge tomes of from 1,000 to 1,200 pages, weighing six or seven pounds, which medical publishers still think desirable.

Dictionary of Medical Diagnosis. By Henry Lawrence McKisack, M.D. Second Edition. Baillière, Tindall and Cox, London. 76 illustrations. Price, 10s. 6d. net.

The first edition of this book appeared five years ago, and much has happened in medicine since that time. In the present edition, full consideration has been given to recent knowledge, and omissions from the first have now been made good. All the modern procedures and tests are described and their uses indicated. The book remains a model of arrangement and of convenience for reading. The comparative tables of symptoms continue to be a feature as in the previous edition. The book will be found quite adequate for diagnostic purposes by the student and practitioner.

Diseases of the Digestive Canal. By Dr. Paul Cohnheim. Edited and translated by Dudley Fulton. Illustrated. J. B. Lippincott Company, Philadelphia and London. Charles Roberts, Montreal.

This is one of Lippincott's best books. It is well translated from a standard German authority. The work is based upon personal experience. The treatment of every subject is direct. There is no attempt to review the literature, or to notice methods merely for the sake of noticing them. The book is rich in illustrations, especially skiagrams, and gives in unequivocal terms a record of the best European experience in the treatment of diseases of the digestive canal, including the œsophagus, stomach, and intestines.

INFECTIONS OF THE HAND. A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand and Forearm. By ALLEN B. KANAVEL, M.D., Assistant Professor of Surgery, Northwestern University Medical School, Chicago. Octavo, 447 pages, with 133 illustrations. Cloth, $3.75, net. Lea & Febiger, Philadelphia and New York, 1912.

This book marks the high degree of specialty at which surgery has arrived. It opens with a history of the subject, and by way of further introduction gives the scope and classification of the various types of diseases which are to be met with in the hand. The main part of the text consists of eighteen chapters which deal with every possible surgical contingency which might arise. The book is a most thorough piece of work and will be found a necessity for the general surgeons as well as the specialist.

PRACTICAL TREATMENT. Volume III. Edited by JOHN H. MUSSER, M.D., Professor of Clinical Medicine, University of Pennsylvania; and A. O. J. KELLY, M.D., Late Assistant Professor of Medicine, University of Pennsylvania. Cloth, $6.00 net. W. B. Saunders Co., Philadelphia and London. J. F. Hartz Co., Toronto.

This is the third volume of this work on treatment which we have mentioned upon two previous occasions at least. All that is now necessary is to mention that the third volume appeared in February. There are over eighty contributors to the work, and amongst them may be mentioned, without making invidious distinctions, Sir Clifford Allbutt, Lewellys F. Barker, Sir Lauder Brunton, Thomas B. Futcher, G. Hudson Makuen, Charles F. Martin, R. Tait McKenzie, and W. J. Mayo. The volume contains over one thousand pages of text and forms an authoritative compendium of the most modern treatment of disease.

CASE HISTORIES IN MEDICINE. By RICHARD C. CABOT, M.D. Second Edition, revised and enlarged. W. M. Leonard, Boston, 1911. Price, $3.00.

These case histories published by Mr. Leonard are quite new in medicine, and have only begun to be issued within the last year. We have previously mentioned with high commendation at least two volumes in the series. The present volume is the fourth. One hundred case histories have been selected to cover the field of general medicine. These have been classified in nine chapters under the headings: infectious diseases, diseases of the gastro-intestinal and biliary tract, diseases of the urinary tract, diseases of the circulation, the respiratory and nervous systems. A final chapter on drug therapy completes the volume. Every case may be read with interest. The facts are first set forth. The diagnosis is considered, and appropriate remedies are discussed. The value of drugs is not neglected. The book is most suggestive, and would prove very useful in the hands of any student, whether undergraduate or physician.

THE NEW PHYSIOLOGY IN SURGICAL AND GENERAL PRACTICE. By A. RENDLE SHORT, M.D., B.Sc. (Lond.), F.R.C.S. (Eng.). The Macmillan Company of Canada, Ltd., Toronto. Price, $1.25 net.

The author of this book does himself but scant justice in his preface. A book which is designed for the use of "candidates for the higher examinations" is apt to arouse memories which one would like to forget; the "general practitioner" has lost faith in books which are designed to meet his special needs; and the "consulting surgeon" does not admit that he requires any further knowledge. The book really contains a fascinating account of the most recent physiology, which can be enjoyed by any intelligent person, whether he comes within these three categories or not. It is a brilliant bit of presentation and gathers up much of the romance of modern medicine. The physiology of the glands and of digestion is especially interesting, and the chapters upon these subjects contain the last word that has been uttered. The book can be read in an evening with much profit, and with more pleasure than the present writer has found in any novel for a long time past.

INTERNATIONAL CLINICS, Vol. IV. Twenty-first Series, 1911. Edited by HENRY W. CATTELL, A.M., M.D. J. B. Lippincott Company, Philadelphia and London. Charles Roberts, Montreal.

An excellent portrait of Edward Jenner adorns the opening page of this volume. The book itself contains eleven departments dealing with treatment of geriatrics, diagnoses, medicine, surgery, otology, pædiatrics, ophthalmology, legal medicine, economics, and history of medicine. This is the first occasion upon which we seem to have seen the word "geriatrics." Presumably it deals with conditions in old age. Children have their own departments, and there is no reason why old men should not have theirs. The subjects dealt with in the department are senile degeneration and senile mentality. Dr. Porter R. Lee, who is the general secretary of the Philadelphia Society for organizing charity, points out the conspicuous evils of dispensary work, which he describes as, first, the treatment free of patients able to pay; second, treatment of patients by several different dispensaries; third, superficial diagnoses due to lack of time or lack of information; and, fourth, failure to relate treatment to the social background of the patient. In an article upon the successful practice of medicine, Dr. Riley offers much advice to young men. The department of history of medicine is occupied by a paper of six pages on "Edward Jenner, the Man," which was read by Dr. W. B. Jennings before the Nu Sigma Nu Medical Fraternity. The address which was delivered by Dr. Adami before the Medical College at the University of Pittsburg appears in the department of medicine. There is a report of extraordinary interest by Dr. Proescher upon "rat-bite" disease, a condition which appears to have been recognized very long ago by Japanese physicians. In many respects this is the most interesting article in a most interesting volume.

FOURTH REPORT OF THE WELLCOME TROPICAL RESEARCH LABORATORIES AT THE GORDON MEMORIAL COLLEGE, KHARTOUM. Vol. A, Medical. ANDREW BALFOUR, Director.

We desire to call especial attention to this admirable report, admirable in the material with which it deals and in its arrangement. It is written with rare literary skill, and is one of the most valuable scientific documents which has been issued for a long time. Few books on travel are so interesting.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

AIDS TO HISTOLOGY. By A. GOODALL, M.D. Baillière, Tindall & Cox, London. 20 illustrations. Price 2s. 6d. net.

DICTIONARY OF MEDICAL DIAGNOSIS. By HENRY LAWRENCE McKISACK, M.D. Second edition. Baillière, Tindall & Cox, London. 76 illustrations. Price 10s. 6d. net.

INTERNATIONAL CLINICS, VOL. IV. Twenty-first Series. Edited by HENRY W. CATTELL, A.M., M.D. J. B. Lippincott Company, Philadelphia and London. Charles Roberts, Montreal.

BULLETIN DE L'ASSOCIATION FRANCAISE POUR L'ETUDE DU CANCER. PIERRE DELBET and R. LEDOUX-LEBARD. Librairie Félix Alcan, Paris.

THE NEW PHYSIOLOGY IN SURGICAL AND GENERAL PRACTICE. By A. RENDLE SHORT, M.D., B.Sc. (Lond.), F.R.C.S. (Eng.). The Macmillan Company of Canada, Ltd., Toronto. Price, $1.25 net.

PRACTICAL TREATMENT. Volume III. Edited by JOHN H. MUSSER, M.D., Professor of Clinical Medicine, University of Pennsylvania; and A. O. J. KELLY, M.D., Late Assistant Professor of Medicine, University of Pennsylvania. Cloth, $6.00 net. W. B. Saunders Company, Philadelphia and London. Canadian Agents, The J. F. Hartz Co., Ltd., Toronto.

FOURTH REPORT OF THE WELLCOME TROPICAL RESEARCH LABORATORIES AT THE GORDON MEMORIAL COLLEGE, KHARTOUM, Vol. A, Medical. ANDREW BALFOUR, Director.

Res Judicatæ

LORD LISTER

ANCIENT and modern surgery lay within the lifetime of Lord Lister, but modern surgery will no longer seem so new a thing now that the creator of it is dead. Lister transformed all surgery by the simple discovery that the tissues will heal themselves if they are left alone. The old surgeons were for "mundifying," "incarning," and "cicatrizing" wounds; and for the healing of them they had their salves, balsams, and other "sanative compounds." This discovery was, as Mr. Treves puts it with his usual felicity of phrase, "splendid in its simplicity, and magnificent in its littleness."

Before Lister's time surgery taught that all organs and all tissues had different ways of healing according to their anatomical construction, and that upon this depended the more or less unfavourable way in which the tissues healed. The old surgeons learned from their experience that the healing of the skin, of cellular tissue, and of muscle, was an easy process, but dangerous and difficult in bone; that the serous membranes healed so badly and their sensitiveness to injury was such that interference with them was prohibited or only undertaken under extraordinary circumstances.

Lister denied that different tissues had different methods of healing. He demonstrated that the ability to repair was the same for all tissues if germs were excluded. They alone were the cause of the apparent difference, because the susceptibility to the invasion of germs differs, but if they were excluded repair was uniform and constant. Surgery then would have the same certainty and security in all tissues, and after these facts had been established surgical teaching assumed the aspect of a scientific formula. All that had been uncertain became certain, and surgery became scientific.

It was Lister who gave this scientific basis to surgery. He made it rest on established truths. He swept away that uncertainty in which the greatest surgeons up to his time had left it. Inspired by the ideas of Pasteur concerning the infinitely little and on fermentation, he conceived the idea that the infinitely little, that is, germs of all kinds, scattered everywhere in the outer world, strove against the natural efforts of the organism towards repair. His first practical attempt consisted in withdrawing a compound fracture from the action of these germs. He recognized that, without cutting off the access of air, he was able to transform this compound fracture into a fracture in which the process of repair was identical with that occurring in a simple fracture. He could at will withdraw it from those complications of wounds which he maintained were of a septic nature. To free the wound from germs was sufficient. He removed those which had collected in it; he prevented the introduction of new ones at the time of dressing, and their access during the interval between the dressing and the final cicatrization of the wound.

The genius of Lister showed itself in this: that, starting from a fundamental observation verified scientifically, he succeeded in determining the general laws of repair. A scrupulous, scientific observer, he succeeded in finding in his micro-biological studies the scientific proofs for which he was searching. An accomplished surgeon and clinical observer, he studied the evolution of a wound down to the minutest detail. He knew how to devise new surgical methods for protection; how to make the local action of antiseptics understood; how to follow the evolution in the soil—that is to say, in the wound; how to make plain the conditions which favoured local protection against germs; and, later, how to protect the wounds from a secondary invasion. The discoveries of Lister were elaborated in the minutest of details, and his method was presented along with a theory of the repair of wounds which was entirely new.

The history of surgery falls into two periods, the one before the discovery of the antiseptic method, and the one after, although the earlier period might be subdivided into three epochs marked, respectively, by the employmentof the ligature for arresting hæmorrhage and by Morton's discovery of anæsthetics.

It is somewhat the fashion to depreciate the share which Lord Lister had in this by saying that the way was prepared and that if he had not discovered the antiseptic method of treating wounds some one else would. There is nothing without its cause, and the cause of Lister's investigation was the research of Pasteur. On December 13th, 1902, the *British Medical Journal* published a special number to commemorate the fiftieth anniversary of the advent of Lord Lister into the profession of medicine. In an article dealing with "Early Days in Edinburgh," Thomas Annandale writes: "Before leaving for Glasgow in 1860, Mr. Lister had commenced his bacteriological work in connexion with antiseptics." Sir William Gairdner, his old colleague, was of the same opinion, but Lord Lister disclaimed specifically to Sir Hector Cameron that he had engaged in the study of bacteriology at that time. Professor Annandale acknowledged that he was in error; but he added that, if Lord Lister had set up a claim that he had anticipated Pasteur, he would have been "very much inclined" to support him. Sir Hector Cameron mentioned this disclaimer of Lord Lister in the "John Watson Lectures" delivered at the Faculty of Physicians and Surgeons of Glasgow in February, 1906. These lectures were revised by Lord Lister himself before they were published, as they have since been by James Maclehose and Sons, Glasgow, 1907.

Lord Lister, in the first communication which he made to the profession about his new method of treatment, in the *Lancet*, March 16th, 1867, writes: "We find that a flood of light has been thrown upon this important subject by the philosophic writings of M. Pasteur, who has demonstrated, by thoroughly convincing evidence, that it is not to its oxygen or to any of its gaseous constituents, that the air owes its property, but to minute particles suspended in it, which are the germs of various low forms of life long since revealed by the microscope, and regarded as merely accidental concomitants of putrescence, but now shown by Pasteur to be its essential cause, resolving the complex organic compounds into substances of simpler chemical constitution, just as the yeast plant converts sugar into alcohol and carbonic acid."

The story from Glasgow was that a certain Mr. Lister was having some success with a "local dressing" of carbolic acid. This substance was not new, and men said it had been employed before. Lister replied that he was not using it as a dressing, but for its germicidal properties in a new way. That was his discovery. He had long thought that wound inflammation was due to a chemical change in the retained secretion; but he did not know the cause of this change till he had read the accounts of Pasteur's researches in the *Comptes Rendus*. In their persons Lister and Pasteur met in Paris in 1892 upon the occasion of Pasteur's jubilee. It appeared to Pasteur's biographer that, "when they arose to embrace each other the sight of these two men gave the impression of a brotherhood of science labouring to diminish the sorrows of humanity."

In the accounts of Lister's early work, one comes continually upon the names of Edinburgh, Glasgow, and Aberdeen, and an impression became current that Lister was a Scotchman. To allow this opinion to prevail is a suppression of the truth. He was born in Essex, April 5th, 1827, of Quaker parents, as members of the "Society of Friends" are commonly called. It was quite a feat in its own way that he, an alien, gained entrance into the stronghold of Scottish surgery, as the people of Scotland are not easily robbed of professional or other privileges. Lister graduated B.A. from University College in 1851, at the age of twenty; M.B. in November, 1852, and was admitted a Fellow of the Royal College of Surgeons on December 9th of the same year. He performed the usual duties of dresser and house-surgeon under Mr. Erichsen, and upon the advice of Professor Sharpey he went to Edinburgh to "take six weeks of Syme's clinic." The six weeks extended to six years. He went to Glasgow in 1860, and did not return to London till 1877. For twenty-three years, then, he, an alien, managed to live in Scotland. It should be added, however, that he married Syme's daughter, which may have some bearing upon the case.

Few persons are aware of the exact nature of Lister's method. It is worth while setting it forth again in all its simplicity, following the account given by Sir Hector Cameron and approved by Lister himself: "A small piece of calico or lint, thoroughly saturated with undiluted carbolic acid, and held in a pair of dressing forceps, was introduced into the wound, and all its accessible interstices were thoroughly and freely swabbed. Two layers of lint, also saturated with the undiluted acid, were laid over the wound, overlapping it in all directions for about half an inch. This was covered by a piece of thin, block tin or sheet lead, moulded in a concave form so as to fit over the little mass of lint. It was fixed in position by strips of adhesive plaster, the limb being placed in suitable splints padded with some soft and absorbent material, which received such bloody discharge as oozed from the wound during the first day or two. The carbolic acid and blood formed a thick paste, with which the small mass of lint was thoroughly saturated, making it into a sort of crust or scab, which adhered to the wound with great tenacity. Once a day the tin cap was removed, and the crust of lint and blood was painted over lightly on its outer surface with carbolic acid. What was aimed at was to keep this crust from becoming septic, while the surface of it in contact with the wound became gradually free from the carbolic acid which it at first contained, and so, being unirritating in itself, permitted of healing beneath it. The vapour of the often-renewed carbolic acid retained under the cap of tin interfered with the process of cicatrization, and, therefore, after it seemed likely that the wound was sufficiently repaired, the antiseptic crust was detached, and the final closure of the surface wound allowed to take place under some simple form of dressing."

Suddenly there was a running to and from Glasgow. Volkmann came from Germany, Bloch from Denmark, Lucas-Championnière from France, and Roddick from Montreal. The news was carried over the world but slowly. It reached Billroth through Volkmann; but it was not till 1879 that this great surgeon was sufficiently interested to make specific enquiry. In that year he sent von Mikulicz-Radecki to King's College Hospital in London, where Lister then was, to verify the earlier reports which his other assistants, Gussenbauer and Wolfler, had brought back. There von Mikulicz learned from Lister "precision and consistency," without which, as he says, a surgeon is "a mere bungler in the treatment of wounds."

Even in Scotland, Lister's practice was received with contemptuous criticism. Sir James Simpson dismissed the germs as "mythical fungi" with no more existence than the aerial sylphs and spirits of the Rosicrucians. Aberdeen was slow to give up its metallic needles. The rivalry was intense. Even students did what they could in a well-meaning way to solve the problem by breaking windows. Many surgeons gave the method a conscientious trial and failed, because they did not possess what Mikulicz calls "precision and consistency."

Simple as this method was, it was completely misunderstood in quarters where better sense might have been expected. Dr. C. Schlimmelbusch is the best exponent of this stupidity. In his work on "The Aseptic Treatment of Wounds," he writes: "A completely impermeable dressing was one of Lister's ideas." We shall see how entirely he was wrong when we remember that Lister provided constant drainage, that he substituted for the putty a lac plaster, because it would not adhere to the skin, that he employed a drain of lint in abscess cavities and all important wounds. On the contrary, he was the great exponent of the open method of treating wounds, so long as there was the slightest probability of any infective substance remaining within.

When we see the surgeon at work without carbolic acid and putty we ask the meaning of it, and the answer is that he is striving to operate aseptically. Lister's method we have heard called by the name "antiseptic." It is excusable if we are confused. This word "aseptic" is old as Hippocrates. That fine Greek taught that wounds should be dressed dry, and Chassignac that they should be drained. What they talked about Lister did. By the use of an antiseptic he made wounds aseptic. Next the wound, a piece of gauze was put below the superficial gauze and termed the deep dressing. Lister used to point out that after serous discharge had washed out the carbolic acid from the deep dressing, the wound could then be considered "aseptic."

His method was simple, but in time it became debased and, therefore, complicated. It was known that germs were in the air, therefore the air must be purified. The carbolic spray was introduced, and the operating rooms were awash with the solution like the decks of a schooner in a head sea. Clean wounds were douched with carbolic acid, the surgeons forgetting the master's teaching that "an antiseptic is injurious to the cellular elements of the body as well as to the microbes. The art of the surgeon lies, therefore, in employing it in a sufficient but not an excessive dose."

It was Lister who made the discovery that if no germs are present a wound will heal. Obviously, if no germs are present one does not require an antiseptic to destroy them. The surgeon's business is to refrain from introducing them, and then he is operating aseptically.

Lister not only propounded the principle of antisepsis; he developed it into what is known to-day as asepsis. After his return from Glasgow to Edinburgh in 1869, he introduced the carbolic spray as an additional safeguard. In 1890 at the Berlin Congress, he finally demonstrated that the atmospheric dust and germs might be disregarded and the spray dispensed with. Nine years before, he put forward the same view in a more tentative way, and the following is written in the *Trans. London Medical Congress*, 1886, Vol. II, p. 372: "The facts seem to indicate that the putrefaction so apt to occur in wounds not treated antiseptically is due rather to septic matter in a concentrated form, than to septic matter in the diffused condition in which it exists, either in water or in air. In other words, is there sufficient chance of the air of an operating theatre or private room containing septic matter which can prove effective in blood serum to make it needful to regard the question of contamination from the atmosphere at all?"

Lord Lister was well known in Canada. He attended the meeting of the British Medical Association at Montreal in 1897, and received from McGill University the honorary degree of Doctor of Laws. His fame will endure so long as men suffer and die upon the earth. A. M.

Men and Books

By Sir William Osler

VI. An Incident in the Life of Harvey. It is remarkable how few letters remain of the great Harvey—two or three at the British Museum, not many more at the College of Physicians, one or two at the Bodleian, only a scanty fragment of what must have been an enormous correspondence throughout his long and active life. There are some precious Harvey MSS., the most remarkable of which are the actual notes of his lectures at the Royal College of Physicians beginning in April, 1616, and including the very one in which, on April 17th, he demonstrates for the first time the circulation of the blood. This manuscript was reproduced in 1886 by a Committee of the College of Physicians (Prelectiones Anatomiae Universalis). Notes of his lectures on the muscles still exist in the British Museum, and it is to be hoped that they may be published before long. A great difficulty is in deciphering the atrocious handwriting, and this may be one of the chief reasons, as Dr. Norman Moore suggests, why so few of his letters survive. It was not worth keeping letters one could not read! Recently there has come to light an interesting collection of about a dozen letters, written in 1636, dealing with an unknown incident in Harvey's life, when he accompanied the mission of Earl Arundel to the Imperial Court of Germany. They have been published by the Historical Manuscripts Commission (Report on the MSS. of the Earl of Denbigh, 1911). Some details of this journey we already know, particularly the vain attempt to demonstrate at Nürnberg to Caspar Hofmann the circulation of the blood. The letters are addressed to Lord Fielding, who at the time was ambassador to Venice. He describes the desolate country through which they had to pass before arriving at Lintz, where they had their first audience with the Emperor, and where some of them "went a-hounting" with him. Then they went to Vienna and Baden, Prague, and Ratisbon. From the latter place he arranged to visit his friend the ambassador at Venice, and eight or nine of the letters are concerned with the troubles and difficulties experienced on the journey. All went well until he reached Treviso, the quarantine station. In spite of his pass, the recommendations from the English king, from the German emperor, and from Lord Arundel, the authorities insisted that his passport was not in proper form, and that he had come from places infected with the plague. Harvey is reputed to have been very quick-tempered, and it must have been terribly trying to him to be detained in a wretched, dirty lazaretto for two weeks, writing frantic letters every day to Lord Fielding imploring the intervention of the government, and of the college at Venice. He slept at first in the open field, as they wished to put him in the lazaretto where he might, as he says, have taken the infection. The phraseology and spelling of the letters are interesting, *e.g.*—"I am a little jealous of them, and to take anny beds now of ther sending, for since ther manners and cruelty hath beene soe shamefull to me, and they have soe little reason for what they have done, it would be like the rest of ther proceedings yf they sent me an infected bed to make ther conjectures and suspitions prove true; therfor I choose to ley still to be redeemed by your Excellency oute of this inocent straw. Yesterday likewise the patron that owed the howse wheare I first took my straw bed (a little poore garden howse full of lumber, durt and knatts, without window or dore, open to the high way att midnight) was to offer me that agayne, because I had chosen that to shun the infamy of this lazeret and the suspition I had that sum infected person had lately bene heare, and from which they forced me with terror of muskets, I write this to shew your Eccellency that all they doe heare upon your stirring is butt formal to salve their own errors."

At last he was released and joined his friend at Venice. After remaining for a time with the ambassador he went on to Florence and Rome. It is a great pity that we have no letters giving his impressions of the changes at his old school, Padua, where he was a student for so long, but it is interesting to get even this brief glimpse of the great physiologist, though under circumstances so aggravating to him.

VII. Letters of Laennec. I do not collect autograph letters, but everything relating to Laennec is of such intense interest to me that it was impossible to resist sending a bid at the Van der Corput sale last year at Amsterdam; and I was fortunate enough to secure two letters and a manuscript of the great founder of modern clinical medicine. Laennec MSS. are not numerous. A few years ago I was interested in looking over those which are in the library of the Faculty of Medicine at Paris (No. 399-400 in the catalogue). The most important, notes of lectures on pathological anatomy, have been edited by Cornil (Paris, 1884). There are lecture notes also of his course at the Collége de France in 1822, 1824, and 1825, and also many memoranda relating to cases. There is a rough pencil drawing of an abdominal tumour; post-mortem notes; quotations from Boerhaave, Baglivi, Morgagni, and Sydenham, many of them on little cards 2 x 1½ inches. Baglivi seems to have been a favourite author, as there are a number of slips and extracts from his writings. Among the MSS. there is an interesting and, so far as I know, unpublished discourse on his admission to the Anatomical Society, 1808, in which he speaks of the advantages of the study of pathological anatomy. In it he refers to a usage of the Society, that all communications should be made "de vive voix"—a good rule, still, I am afraid, much honoured in the breach.

There are also incomplete papers on "Blood-clots in the Vessels During Life," "Cartilaginous Bodies in the Joints," and "On Accidental Tissues."

Of the letters which I was fortunate enough to get, one is a very brief note to an astronomer friend, dated 1810, handing on a letter which he had just received from Baltimore describing an unusual astronomical phenomenon. The other, which is dated 1824, is a letter of introduction given to Dr. Villemoneise, who had worked with him at the Necker Hospital. The third MS. is a rough draft of four pages of the obituary notice (written May 12th, 1816) of one of the most lovable of men—Gaspard Laurent Bayle.* Laennec's senior by seven years, Bayle was a man of extraordinary capacity, with, as Chomel remarks in his notice of him, "un esprit infatigable." Not one of the group of distinguished pupils of Corvisart had made such an impression on his contemporaries. He had devoted himself to the subject of tuberculosis, on which his monograph (1810) is still one of the landmarks in our knowledge of the disease. He died of an affection of the chest, probably tuberculosis, at the early age of forty-two, deeply lamented. Laennec concludes his sketch with the words: "Les pauvres regretteront longtemps en lui le médicin qui, en leur donnant ses conseils ne les laissa jamais dans l'impuissance de les suivre; ses confrères, l'homme modeste qui jeune encore était déjà une des lumières de la médicine française; et ses amis, un ami d'un commerce sûr, d'une sagesse profonde, d'une douceur et d'une égalité de caractère à l'épreuve de tous les évenémens."

VIII. Dr. Payne's Library. The working library of a doctor is not, as a rule, worth much after his death; but when a man is interested in books, knows their value, and buys judiciously, the collection which he leaves may form a considerable part of his estate. I know an old doctor living not far from here whose hobby for forty years has been first editions, some half a dozen of which are worth his entire establishment.

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*His biography in Bayle, *Biographie Medicale*, is well worth reading.

A scholar and a book lover of the best type, Dr. Joseph Frank Payne began to collect early, and had wide interests, both professional and literary. There was no one in England better versed in the history of medicine, to which he had made a number of contributions of the first rank, principally on Anglo-Saxon medicine. Shortly before his death he delivered in Oxford a most instructive course of lectures on Greek pre-Hippocratic medicine, which it is to be hoped he has left in a state for publication.

Part of his library was sold in July, and the remainder at the end of January. The first portion consisted of between two thousand and three thousand volumes, including many splendid incunabula, a number of choice MSS., ten or twelve old diplomas, many medical portraits, a special collection of works on the plague, and an extraordinary collection of nearly fifteen hundred medical tracts, chiefly English. I was anxious that the library should be kept together, and my friend, Mr. A. W. Marburg, of Baltimore, very kindly commissioned me to buy it for the Johns Hopkins Medical School, for which a few years ago he bought a valuable collection of old books. The executors had placed a reserve price of £2,700, but on the morning of the sale I received an intimation that it would be reduced to £2,500. The collection was to be offered first *en bloc.* With Dr. Henry Barton Jacobs and Dr. George Dock, I went to Sotheby's at one o'clock on January 12th. A more rapid sale I never saw. The bidding began at £2,000, and within a minute it was knocked down to an unknown bidder at £2,300, a figure beyond that which Mr. Marburg had mentioned, but Dr. Jacobs and I were prepared to go to the reserve price, had we had a chance! The name of the purchaser is not known, but I believe the collection remains in this country.

The second part of the library consisted of a special collection of about one hundred and sixteen Herbals, a few miscellaneous classical works, and a collection of first and other editions of Milton, and Miltoniana. The Herbals were offered *en bloc*, but the reserve price was not reached. Several of the fifteenth century Herbals brought a very good price; a 1488 Herbarium, the earliest with figures of plants, brought £96. For years Dr. Payne had been very much interested in Milton, and his collection contained a very large number of first editions The highest price paid for a single item was for a quarto edition of the famous tract on "Education," one of the very few copies known in this form, for which Mr. Quaritch paid £172. The library realized as a whole £4,353, a figure which is rarely reached by modern medical collections.

Obituary

Dr. Herbert L. S. Chaplin died at St. John's, Newfoundland, his native town, on January 18th, aged thirty-one years. Dr. Chaplin was a graduate of McGill College.

Dr. Alexander Hugh Ferguson died on October 20th, 1911, at Chicago. He was president of the Chicago Medical Society and professor of surgery in the Post Graduate Medical College. Dr. Ferguson was a graduate of Trinity in Toronto, and for some years lived in Winnipeg, being one of the original incorporators of the Manitoba Medical College.

Dr. Frank Hall, of Victoria, died there on October 3rd, 1911.

Dr. W. D. McLaren died at Barrie, on October 10th, 1911, the result of a fall sustained at a gathering of the Mississuaga Light Horse, of which regiment he was a major.

Dr. A. A. McCrimmon died on January 24th at Rainy River. He was formerly mayor of the town, and during his tenure of office installed an efficient system of waterworks and septic sewage plant. Dr. McCrimmon was a graduate of McGill College in 1891.

Dr. Mary L. Randall Morris died on January 18th at Truro. Dr. Mary Morris was a graduate of the School of Medicine, Dalhousie University.

Dr. L. Potter died January 18th at Port Hope, Ont., in his sixty-ninth year. He was born at Darlington, and was a graduate of Queen's University, Kingston.

Dr. C. H. Britton died at Toronto on February 2nd. Dr. Britton was a graduate of Toronto Medical School.

Dr. R. A. Corbett, of Port Hope, died at Ocean Park, California, on January 27th.

Dr. Robert Milner Morris died at Winnipeg on January 27th.

News

THE MEETING IN EDMONTON

The annual meeting for 1912 of the Canadian Medical Association will be held in Edmonton about the middle of August. The exact date has not yet been fixed, but additional information will appear from time to time. Although railway rates have not yet been finally settled, it is possible to say that the railway companies will give the usual privilege of the standard convention certificate plan from all points in Canada. This would indicate a single fare, providing a sufficient number applied for certificates.

PROVINCIAL BOARD OF HEALTH (NEW BRUNSWICK)

The annual meeting of the Provincial Board of Health was held at Fredericton on January 23rd. Dr. McManus, Dr. Sprague and Dr. W. W. Hubbard were appointed a committee to look into the matter of epidemics arising from infection through lumber camps and to report at the next meeting of the board.

ST. MICHAEL'S HOSPITAL

A new medical wing which has been recently added to St. Michael's Hospital will increase that institution's accommodation by about two hundred beds, and will supply a long-felt want in Toronto's down-town districts. The structure is four stories in height, of red brick over steel and reinforced concrete, and is built on generous lines throughout. Features of special interest are the spacious roof garden, reached by elevator; eleven airy, well-lighted public wards communicating with balconies, and twenty private wards; linen closets and blanket-warmers on each floor, and a splendidly equipped kitchen. Communicating with each public and private ward are toilet and bath rooms lined with white ceramic tiling, while a spacious rest-room, situated next to each public ward, is intended to be occupied by patients whose critical condition renders their occupation of the general room inadvisable. Doors of a uniform width of forty-one inches will readily permit the wheeling of the beds of such patients from room to room. Additional improvements are the installation of a new *x*-ray apparatus and electrical therapeutic room, and special accommodations for university students. Terazzo flooring in all corridors, magnificent ventilation by the fan system, carved oak wood-work, and white plaster ceilings fulfil both the æsthetic and hygienic requirements. The building will be formally opened on March 19th.

INTERNATIONAL MEDICAL CONGRESS

THE eighteenth International Congress of Medicine will be held in London in August, 1913.

The Canadian committee is composed of the deans of five medical faculties, namely, Dr. C. K. Clarke, dean of the medical faculty, University of Toronto; Dr. J. C. Connell, dean of the medical faculty, Queen's University; Dr. H. H. Chown, dean of the medical faculty, Manitoba University; Dr. E. P. Lachapelle, dean of the medical faculty, Laval University; F. J. Shepherd, dean of the medical faculty, McGill University, and three physicians who have held office in the Canadian Medical Association, namely, Dr. George Armstrong, Montreal, Dr. A. McPhedran, and Dr. W. H. B. Aikins, Toronto.

ONTARIO MEDICAL ASSOCIATION

THE meeting of the Ontario Medical Association for 1912 will be held in Toronto, May 21st, 22nd, 23rd. The president, Dr. H. A. Bruce, will preside.

The following are the chairmen of committees and sections: Papers and Business, Dr. Graham Chambers; Arrangements, Dr. T. J. Fotheringham; Surgery, Dr. A. Primrose; Medicine, Dr. W. P. Caven; Eye, Nose and Throat, Dr. Boyd; Obstetrics and Diseases of Women, Dr. F. Fenton. The general secretary is Dr. F. Arnold Clarkson, 471 College Street, Toronto.

AMERICAN PHYSICAL EDUCATION ASSOCIATION

THE American Physical Education Association held its nineteenth annual convention in Montreal, February 22nd, 23rd, and 24th. The convention was divided into various sections, namely, the Physical Education Association, the Society of Directors of Physical Education in Colleges, the Therapeutic Section, the Public School Section, and the Secondary School Section. The convention was presided over by Dr. R. Tait McKenzie, director of physical education in the University of Pennsylvania. Dr. B. E. McKenzie, of Toronto, read a paper on "Physical Training in the Treatment of Neurosis," and Dr. F. W. Harvey, of Montreal, upon "Diastasis Recti." The programme was a lengthy one, and included over thirty separate subjects.

THE CANADIAN HOSPITAL ASSOCIATION

The Canadian Hospital Association will hold its next meeting in Toronto, April 4th, 5th, and 6th. The annual address will be given by the president, Dr. H. A. Boyce. The evening meeting on Thursday will be opened to the public and will be addressed by Dr. Monro Greer, Dr. Helen MacMurchy, and Dr. Edward Stevens of Boston. On the following days papers will be presented or addresses will be given by Dr. W. W. Kenny, Halifax; Dr. E. H. Young, Kingston; Dr. J. N. E. Brown, Toronto; Mr. H. E. Webster, Montreal; Mr. J. S. Park, Montreal; Dr. James Third, Kingston; Dr. McClure, of the Solway Hospital, Michigan; Dr. C. K. Clarke; and Miss Charlotte Aikens.

Dr. J. W. J. McCullough, chief health officer of Ontario, is conducting an investigation into the cause of typhoid at Sarnia.

Work has been started on the construction of the new St. Paul's Hospital, Vancouver.

The isolation hospital at Edmonton was partially destroyed by fire on January 12th.

The new children's hospital at Winnipeg was partially destroyed by fire on February 3rd.

Dr. W. H. Harvey, formerly of Toronto, and now of Cambridge, has received one of the Beit memorial fellowships for medical research.

At a meeting of the Trent Valley Medical Association held on January 25th, the following officers were elected: president, Dr. Kidd, Trenton; vice-president, Dr. Simmons, Frankford; secretary-treasurer, Dr. Farncomb, Trenton.

The new Toronto General Hospital will be opened on October 1st.

Dr. A. H. Garratt, who has been seriously ill, is improving.

THE members of the staffs of Toronto General Hospital, St. Michael's Hospital, and the Hospital for Sick Children will commence shortly the publication of a Quarterly Bulletin. The editorial staff will consist of an editor, associate editor, and editorial board, and only material of a clinical nature will be accepted.

A COMMITTEE of the staff of Toronto General Hospital is engaged in the preparation of a hospital pharmacopœia. It will be on the same lines as the pharmacopœias used in London and Edinburgh hospitals.

FOLLOWING the example of the War Office in Great Britain, the Director-General of Medical Services for Canada proposes to organize voluntary first-aid detachments throughout the country. As in Great Britain, these organizations will act in every case in collaboration with the St. John's Ambulance Association and the Red Cross Society. In Ontario alone the St. John's Ambulance Association includes over two thousand certificate holders.

DR. J. J. MCCARREY, chief of the food inspection department of Montreal, has resigned his position, and will take up private practice.

DR. W. A. DAKIN, late house-surgeon in the Montreal General Hospital, has been appointed superintendent of the General Hospital in Regina.

DR. A. B. MOOREHEAD, Toronto, has been awarded the final fellowship of the Royal College of Surgeons.

DR. A. S. KENDALL has been appointed health officer of Sydney.

PLANS are being prepared for the erection of a new small-pox hospital at Calgary.

THE Canadian Copper Company's hospital at Copper Cliff has been burned down. Loss on building estimated at $40,000; on equipment, $10,000. It is stated the hospital will be rebuilt.

THE James Hammet Dunn memorial hospital at Bathurst was officially opened on January 26th by Lieutenant-Governor Tweedie, who congratulated the town on their acquisition of such a commodious institution. The new hospital is of complete modern equipment, and owes its existence largely to the generosity of Mr. James Hammet Dunn, a native of Bathurst, who contributed handsomely to the funds.

THE results of the examinations of the College of Physicians and Surgeons of Saskatchewan held in December are as follows:— D. W. Allen, A. P. F. Nelles, C. M. Gregory, M. R. Bow, J. B. Swanson, E. R. Graham, W. F. Gravin, C. O. Wood, F. W. Wallace, D. Swancy, W. O. Stevenson, C. E. Stafford, A. E. Ross, D. Regg, S. B. McMillan, J. O. N. Leepien, C. Long, A. F. Lepper, R. A. Hodgson, M. F. Hayes, T. J. Glover, A. Fettes, F. R. Elliot, W. A. Dakin, H. A. Culhom, J. F. Creighton, F. A. F. Corbett, C. H. Christie, M. A. Carmichael, J. E. Bloomer, W. C. Bliss, V. E. Black, C. W. Bishop, E. B. Alport.

A SUM of $35,000 has been provided locally, and a similar sum has been promised by the provincial government, for the new Kootenay Lake General Hospital to be erected in Nelson.

A MEETING of the subscribers to the new public hospital in course of erection at Smith's Falls was held on January 24th, and the financial position of the undertaking was reported on favourably by the president, Mr. F. Whitcomb.

CORRECTIONS AND ADDITIONS IN LIST OF MEMBERS

G. CLOWES VAN WART, 141 York St., Fredericton, N.B.; S. H. McCoy, 459 Avenue Road, Toronto; W. Logan Silcox, 181 Herkimer St., Hamilton; G. H. Christie, Lachute, P.Q.; Emile Nadeau, Immigration Hospital, Quebec; Emmet J. Mullally, 93 Union Ave., Montreal; Chas. P. Lusk, 264 Bloor St. W., Toronto; C. Y. Moore, Brampton, Ont.; H. A. Grant, Little Bras d'O. Bridge, Cape Breton.

Canadian Literature

Original Communications

Le Bulletin Médical de Québec, December, 1911:

La plurite sèche précordiale	C. Mantoux.
Traitement du coma diabétique	Dr. Blum.
Les tachycardies	Dr. Maisons.
Septicémie bacillouse	Dr. Hutinel.

Le Journal de Médecine et de Chirurgie, February:

L'enseignement médical aux universetés d'Europe et d'Amérique	E. Saint-Jacques.
Le "606" et les médecins	R. Falardeau.

Le Montréal Médical, February:

Rôle de l'auto-intoxication dans l'occlusion intestinale	H. Roger.
Le syndrome artério-scléreux de l'intestin	L. Lagne.
Des différentes variétés d'hématone et du traitement qui convient à chacune d'elles	R. Bonneau.
Le rôle du chien dans la transmission des maladies	Dr. Blanchard.
La transmission des maladies contagieuses par les habits ou "vêtement de dessous"	Dr. Remlinger.
Traitement des engelures	P. Jourdanet.
Le neuro-arthritisme thyroidien et son traitement	Dr. Levie.

The Canada Lancet, February:

Rupture of Intestine	S. M. Hay.
Short Résumé of Spiral Analgesia	E. V. Frederick.
An Appeal to Young Men in Medicine	John Hunter.
Report of a Case of Acute Appendicitis	J. P. Kennedy.

The Canadian Journal of Medicine and Surgery, February:

The Diagnosis of Extra-Uterine Pregnancy, with the Report of two Cases of Primary Ovarian Pregnancy	James A. MacLeod.
Thrombosis of the Femoral Artery Complicating Typhoid in a Boy, Amputation, Recovery	Henry T. Machell.
What the Average Medical Man Expects of the Hospital	J. S. Hart.

Dominion Medical Monthly, February:

Treatment of Typhoid Fever	G. Chambers

Western Canada Medical Journal, January:

Types of Flat-Foot and their Treatment.	Herbert P. H. Galloway.
A Lecture on Some Physical Aspects of Cardiac Failure	David Forsyth.

Public Health Journal, February, 1912:

Sanitation and Hygiene	J. T. Clarke.
Town Planning and Housing	Charles A. Hodgetts.
Educational Methods Now Employed in Great Britain for Reducing Infant Mortality	Ellen Babbitt.
The Medical Health Officer	Maurice M. Seymour.
The Chemical Principles Involved in Sewage Disposal	George G. Nasmith.
Hygiene of Canadian Water Ways	William Oldright.

The Canadian Practitioner and Review, February, 1912:

Nasal Accessory Sinuses	J. N. Hurd.
Difficulties in Breast Feeding	G. S. Strathy.

Medical Societies

TORONTO ACADEMY OF MEDICINE

At the monthly general meeting of the Toronto Academy of Medicine, held on February 6th, the feature of the evening was an address by Dr. A. H. Caulfeild on "The Effect of Modern Post-Mortem and Laboratory Methods upon our Conception of Tuberculosis."

Dr. Caulfeild called attention to the fact that of all post-mortem examinations of adults, a very large percentage showed pathological lesions which would indicate tuberculous infection. This, he said, was important, but must be considered in relation to clinical symptoms, the "tuberculin reaction" and certain laboratory data. One should consider the importance of stenosis of the articulation of the first rib, and consequent obstruction of the upper thoracic duct—an undoubted factor in the production of early apical tuberculosis. This defect might be treated surgically in childhood.

Tuberculosis frequently exists where no symptoms are present; and this may be demonstrated both by post-mortem findings and in the living subject. Certain series of tuberculin reactions made on children of from one to fifteen years of age are of interest, since the general conclusion drawn from them is that by this latter age practically every child has been infected at least once. An additional important deduction is that this results in most cases in the production of at least a partial immunity.

Dr. Caulfeild then touched on the complement-fixation phenomenon (Bordet and Gengou), its relation to tuberculosis, and more especially its connexion with a substance called "inhibitin," which co-exists with it (Calmette and Massol, *Comp. Rendu de la Soc. de Biolog*, February, 1909). An injection of dead bacilli would produce three results in a patient. These were: (1) The appearance of a relative immunity; (2) the appearance of a positive tuberculin reaction; (3) the appearance of a complement-fixation reaction. Only one of these results would be affected by the presence of inhibitin, the complement-fixation reaction. Sera containing antibodies alone would give the Bordet Gengou reaction with comparatively small quantities of antigen; but in the presence of inhibitin, which is a hæmolyzing agent, hæmolysis would take place even in the presence of large amounts of antigen. The important aspect of inhibitin is its value in prognosis. A decrease in inhibitin invariably antedates and indicates more or less progressive clinical symptoms and pathological changes, and suggests a distinctly less favourable prognosis.

Discussion was opened by Dr. McPhedran, who called attention to recent verifications of the old German axiom, "Jedermoun hot am Ende ein gischen tuberculose." He congratulated Dr. Caulfeild heartily on his work.

Dr. H. B. Anderson remarked that the inhibitin reaction would be of limited value in prognosis where the anatomical envolvement was large and accidents, such as the rupture of a blood vessel, were likely to happen.

Dr. Graham recommended a quantitative tuberculin reaction.

Dr. H. H. McDonald spoke in reference to the value of the tuberculin reactions in life insurance. Other speakers were Professors J. J. MacKenzie, Elliot, Goldie, and Kendal.

Eye, Ear, Nose and Throat Section

Meeting of December 4th, 1911.

Cases Shown:—Dr. Goldsmith:

1. Case of Vincent's Angina. Boy, eleven years old. Mother asked advice of her physician regarding some white spots seen on the tonsils. The tonsils were very large and moderately inflamed. The crypts were filled with exudate. A shallow cucular ulcer was noticed on the right tonsil. In a few days another ulceration occurred on the same tonsil, and, later, one on the other side. Bacteriological examination showed the case to be one of Vincent's angina.

Discussion: Dr. Price Brown would advise the use of the electric cautery upon the ulcers, to reduce the size of the tonsil and later to remove it more effectually. He does not think that the simple application of iodin would cure the ulcers or reduce them materially in size.

2. Case of Tuberculosis of Mastoid. Girl, eleven years old. Seen first two years ago for a swelling over the left mastoid and a history of otitis media for two months. Operation revealed extensive destruction of mastoid. A very extensive operation was performed, requiring laying bare the lateral sinus and dura above the antrum, as in each place the carious bone was replaced by granulation tissue bathed in pus. Though the radical operation had not

been performed, there ultimately ensued very marked contraction of the cartilaginous canal, which could not be kept open in spite of every means I could apply. The wound healed after some six or eight weeks. Nine months later, without any pain or discomfort, there again appeared a swelling over the same mastoid, which was evidently filled with pus. The radical operation was performed and the middle ear and mastoid very thoroughly exposed. This was performed eight months ago. The posterior wound would stay closed for a time, then break down, and this has been repeated until now the middle ear and antrum are shut off by a false membrane. There still exists some granulation and moisture external to this false membrane, on which I am trying the effect of scarlet red. If one closely watches this false membrane, he will notice that each time the patient swallows there is an indrawing of the membrane.

3. Case showing unusually the long process of the incus through an intact membrana tympani. This is shown because the exhibitor has long disagreed with the illustration in many aural works which conveys to the student the impression that he should nearly always see this process. He seldom sees the process, but if one is bent on thinking he sees it, he will have many cases to help him.

4. Case shown for diagnosis. This had developed some new phases, and was held over for another meeting.

Discussion: Dr. Price-Brown considers the last case a specific one, and not one of Vincent's angina, as suggested.

Dr. Price Brown:—

1. Tonsils removed from a young Chinaman. These were very large, and the uvula was very slim and short. The epiglottis was very small and hood-shaped. These points seemed to corroborate the expressed ideas of Gordon Wilson (Chicago) that the Chinaman's larynx was smaller than that of the white races. The case was shown for its anatomical interest.

Discussion: Dr. Goldsmith said one must remember in speaking of the epiglottis, that it belongs to a boy, and that of a small race. He did not see anything very odd about the epiglottis, but would class it amongst those known as infantile, which are not uncommon in grown-ups of the Caucasian races, at any rate.

Dr. Sutherland said that he had seen as small larynges in adults of our own race.

Dr. MacCallum said that he understood that Chinamen usually sang in sharps, and asked if the smallness of the larynx would account for that.

2. Case of malignant disease of the throat.

Discussion: Dr. Goldsmith said that evidently Dr. Price-Brown has removed a large mass from the left side of the pharynx, including the anterior and posterior pillars, as well as a small part of the anterior surface of the soft palate. A malignant growth of such magnitude, situated in an area drained by such direct lymphatic channels into the cervical region, should, he thought, be associated with a thorough removal of the cervical glands. Cauterization will not take the place of a thorough removal of the glands. Butlin is very strong in his views that the removal of malignant disease in the mouth should be followed by very free gland dissection below.

Dr. Reeve showed a case of neuro-retinitis, said to be syphilitic in origin. The patient was said to have been given "606" last June, before coming under observation. Left vision is fingers. Right shows a central red-green blindness. Observers say that certain signs continue to develop after "606," and it is well known that the iodide and mercury will not head off the coming of signs in the second eye.

Discussion: Dr. Burnham recalled Jonathan Hutchinson's remarks long ago on the possible dangers of the use of the synthetic, organic compounds of arsenic.

Dr. Hunter asked if there was any knowledge of the dose of "606," and the method of giving it in this case.

Dr. Colin Campbell:—

1. Double Glioma Retinæ. Child, four years old, with history of defective vision since birth. Diagnosis made over a year ago elsewhere, but operation not considered. Two months ago the left eye removed for relief of pressure symptoms. Recurrence *in situ* noted ten days ago; has progressed rapidly. Section of the globe shows the mass growing along the nerve. Microscopic section shows typical glioma. *X*-rays are being applied every three days.

Discussion by several members as to the advisability of any further operation.

Dr. Reeve advised against any further interference, for when the glioma once becomes extra-ocular it usually develops much more rapidly.

Dr. MacCallum called especial attention to the difficulty of giving proper advice to the parents in such cases.

Dr. Trebilcock advised against any operative interference which would prolong the life of a small child with such a hopeless prospect, unless it were absolutely necessary to alleviate pain, and he would try first to do this by drugs.

Dr. Campbell said that he had advised against further operation, but felt tempted if pain recommenced to exenterate and use *x*-rays to the orbit.

Dr. Burnham reported a case of Paralysis of the External Rectus following injury to the head. Such a marked internal squint resulted that the cornea could hardly be seen. The condition, which was of three years standing, was associated with intense neuralgic pain, and operation had been done with the object primarily of relieving the pain. An internal tenotomy had been done with great difficulty, and the result had been very satisfactory. The cosmetic result was fairly good, and the man free of pain. Dr. Burnham regretted that the man had waited so long before presenting himself.

Discussion: Dr. Reeve recited a case very similar in detail.

Dr. Campbell thought we often delayed too long in such cases.

Dr. Trebilcock emphasized the possibility of the function of the paralyzed muscle returning, and a secondary squint resulting if operation were done too early. As long as the vision of the eye was watched there was no reason for haste.

Dr. Sutherland could not see how a tenotomy would relieve pain in such cases, though he recognized that it was so. He advised waiting at least six months before operation.

Dr. Burnham closed the discussion.

January meeting. Cases shown:—

Dr. Goldsmith: (1) A boy with a tight band stretching from the point of the chin to the region of the sternal notch, which made it impossible to keep the mouth closed with the head in the erect position. The band was not tied down to the deeper structures, but was carried forward on to the anterior surface of the symphysis of the jaw. Below it was gradually lost in the region of the sternal notch. It was suggested that it was composed of the skin and platysma. About the centre was an elongated nodule which resembled an irregular scar, but had been present at birth. Proposed to make a longitudinal incision and either entirely remove the band, or cut across it as appeared best, and to remove the nodule.

Discussion: Dr. Reeve suggested a subcutaneous division of the band, and a plaster splint to keep the head erect.

Dr. Wishart would get rid of the nodule first, and afterwards do the subcutaneous division.

Dr. MacCallum emphasized the importance of the plaster splint during the healing.

Dr. Goldsmith reported on two cases of throat ulceration shown at the last meeting. The first had been treated with iodin and had cleared up very rapidly; the second had progressed very rapidly so that the uvula sloughed off, and the ulceration reached into the posterior faucial pillar; Wasserman reaction was positive, and "606" had been used with rapid improvement. He hoped to show the case again.

Dr. Wishart and Dr. Goldsmith presented two cases to induce a discussion on the extent to which the cartilage should be removed in the operation for deflection. Dr. Goldsmith said the question to be answered was, what was the real support to the bridge of the nose? His own opinion was that the anterior nose is supported largely by the resiliency of the lateral cartilages, and he was not afraid to remove the cartilage well forward. He instanced the case of a pugilist seen in Boston whose septum had been almost entirely removed, and whose nose showed no external deformity, even after being struck. Also a case of his own where he had removed the septum well forward in a man who boxed a good deal, and even after receiving severe blows upon it there was no falling in.

Dr. Wishart was accustomed to do the operation in two stages. He made it his aim to leave a narrow pillar of cartilage from the floor to the roof of the nose. He did this for fear of sinking of the bridge; he had never had a case of subsequent deformity in his practice, but there had been some reported after large resections, and he preferred to be on the safe side. He had only had one case where he considered it necessary to remove the whole support.

Dr. Reeve drew some comparisons between a large resection and the extensive destruction seen after syphilitic disease in the nose.

Dr. Goldsmith then showed a number of very fine skiagraphs which made very clear the position of the accessory sinuses of the nose. He called attention to the large size of the sphenoidal sinus and especially to the depth to which it occasionally reached.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The seventh meeting of the Society was held January 5th, 1912, Dr. J. M. Elder, president, in the chair.

Living Case: Dr. A. E. Vipond exhibited two monkeys in which he had induced pericarditis from inoculation of a culture of bacilli taken from a large inguinal node of a child who suffered from acute rheumatism.

Pathological Specimens: Exhibited by Dr. A. H. MacCordick.

1. Ruptured Duodenum: A male, aged twenty-four, who fell forty feet. Patient died two hours after admission. There had been continuous vomiting of blood, with distended and rigid abdomen.

2. Ruptured Spleen: Child of three years fell sixteen feet. Admitted to the hospital twenty-four hours later in a state of shock, with distended and rigid abdomen. Operation revealed a lacerated spleen which was removed. The blood count was little affected. The child is now well two years after the accident.

3. Ruptured Kidney: Man aged fifty, fell two feet, striking his side against a scaffold. He went to a Winnipeg hospital, where ruptured kidney was diagnosed, but operation refused. He entered the Montreal General Hospital four months after the accident with a tumour in the side, weakness, and emaciation. He passed large clots of blood per rectum. Died ten days after admission. Autopsy revealed perinephritic abscess which perforated the bowel, with ruptured kidney.

Discussion: Dr. L. J. Rhea: The case of perinephritic abscess is interesting also in that it shows the attempt nature makes to drain these nephritic abscesses. This abscess has spontaneously drained in two places, through the duodenum and through the cæcum.

Dr. J. M. Elder: I was very much interested in the rupture of the spleen, as I had a similar case some years ago. It was that of a child, a boy of about eight years old, who while playing in a yard tumbled off the fence, falling over backwards. He felt a little faint at the time, but got up and managed to get half-way home, when he again felt faint and stumbled into a drug store. The druggist recognized that there was something wrong, and called the ambulance. I saw him in the hospital, and found the whole abdominal cavity full of blood, and the spleen in three pieces, so I removed it. I do not know what the after history of the case was, whether he had any enlarged glands or not, as he left the hospital apparently well and did not return. It was a very trifling injury, indeed, to account for such a very serious result.

Case Report: Endocarditis. Dr. H. B. Cushing.

Paper: "Clinical and Pathological Notes Upon Certain Sub-Tropical Diseases." Illustrated by lantern slides. Dr. Fraser B. Gurd.

Case Report: "Some Cases of Fractured Pelvis." Dr. J. M. Elder.

Discussion: Dr. J. M. Elder: The boy had a fracture to the right of the symphysis pubis, and it must also have been fractured posteriorly in front of the sacro-iliac synchondrosis, allowing the bone to be shoved in and not up, and produced this one and a half inch shortening.

Dr. A. T. Bazin: I had a case under my care some four years ago of a girl aged fourteen, who, when walking across a factory floor, stepped on an automatic trap door just as the elevator was rising. She was thrown down and caught between the wall and this floor. She was brought into hospital in a condition of shock, with severe pain in the pelvis. There was shortening in the left leg, which lay in a position of abduction, a hæmatoma over the left lower abdomen, and great pain and tenderness over the symphysis, which was entirely out of symmetry. As there seemed no evidence of continued hæmorrhage she was allowed to remain quiet for a few hours and skiagraphy was postponed till the following day. That evening the catheterized specimen was almost pure blood, and she was taken to the operating room and an incision made down over the lower part of the abdomen, but extra-peritoneal. The bladder was found ruptured, or rather the urethra was found torn out of the bladder with a portion of the wall of the bladder attached. The hæmatoma above mentioned was mostly in the muscle of the abdominal wall. The symphysis was found on the left side considerably higher than on the right, and this mal-position was corrected while she was under the anæsthetic by bringing the right leg into line. The patient's condition was extremely bad, so that the operation was hurried through as quickly as possible. A catheter was introduced and a couple of mattress sutures brought the urethra and bladder together over it. Dr. C. W. Anderson held this in position by tying the catheter to the pubic hair, a method which proved very satisfactory. She was returned to her bed and, as the slightest movement caused intense pain, no skiagram was taken until after she was convalescent. The skiagram showed that we had also to deal with an impacted fracture of the neck of the left femur, which explains the position of the limb in abduction with shortening. There was fracture through the body of the pubis just to the left of the symphysis, and also fracture of the descending ramus on the left side. The condition on discharge was as follows: Left leg everted and shortened, five-eighths of an inch; movements of hip normal except for external rotation, which is limited; walks easily and without apparent limp. Union at fractures of pelvis, with no movement at symphysis when rocking weight from one leg to the other. Voids urine naturally; no residual urine; slight grade of cystitis persists.

Dr. J. Appleton Nutter: With regard to the shortening of the leg I had the opportunity of observing the case of a boy who appeared at the orthopædic clinic of the General Hospital with a very marked limp and a shortening of the left leg of about half an inch. There was a history of having been run over by a cart two months before and receiving a very severe crush in the region of his left buttock. He had singularly little limitation of movement at the hip-joint, and the *x*-ray showed nothing so far as the femur was concerned. Further plates showed that the trouble lay with the pelvis, which had been fractured, the principal fracture having occurred through the acetabulum. There was considerable asymmetry in the two halves of the pelvis, and this was undoubtedly the cause of the shortening, as there was nothing in the femur itself.

Dr. J. Kaufmann: This summer at the Royal Victoria Hospital, a patient, an old lady about sixty years of age, came to the neurological clinic with a history of suggestive sciatica, for which, according to her story, all modern methods of treatment had been employed for months without any relief. A careful history revealed the fact that the patient's illness followed a slight fall from a chair a few months ago, and that since then this condition of sciatica developed. There was nothing else suggestive in the history. Examination of the patient showed a somewhat atrophied right lower limb which was somewhat shortened. The right hip was considerably flattened. An *x*-ray photograph showed that the head of the femur was driven right into the pelvis, crushing the greater part of the body of the true pelvis. This condition accounted for all the symptoms and signs. The interesting point is that with this extensive fracture of the true pelvis there was absolutely no symptoms of urinary disturbance at any time.

Dr. J. M. Elder: In the case just cited there was no reason why there should be any urinary symptoms, if the head of the femur was only driven in. This last condition is not so rare; but to get a case with an inch and a quarter shortening is rather remarkable. The patient has no limitation of the movements of the hip, but has a perfect range of motion, and the acetabulum and the femur are right, but the acetabulum is driven into the true pelvis to the extent of an inch and a quarter.

OTTAWA VALLEY MEDICAL ASSOCIATION

The Ottawa Valley Medical Association held their winter meeting on January 18th, in the town council chambers, Renfrew. Dr. McCormack, president of the association, occupied the chair, and papers were read by Dr. B. E. McKenzie, of Toronto, and Dr. Webster, of Ottawa. The Association meets in July at Arnprior, at which gathering the officers for the year will be elected.

VANCOUVER MEDICAL ASSOCIATION

At the January meeting of the Vancouver Medical Association, Dr. F. C. McTavish read a paper on "Congenital Dislocation of the Hip," which was illustrated with skiagraphs. He had treated it after the Lorenz method. Dr. W. C. McKechnie showed an excised ulcer of the stomach and gave the symptoms of the case.

At the February meeting, Dr. A. S. Monro, on behalf of the special committee, presented a series of resolutions condemning the practice of dividing fees. It was decided to send a copy to each member of the Association, and to pass finally on the subject at the meeting in March. Dr. A. E. Rich, of Portland, Oregon, read a paper on "Major Points in Child Surgery," in which he laid especial stress on paralytic deficiencies. He described the method of Lange, of Munich, in inducing the growth of peritoneum along strands of specially prepared silk for the purpose of acting as stays or supports in forming new ligaments. The attendance of members at this meeting numbered fifty-one.

OXFORD COUNTY MEDICAL ASSOCIATION

THE annual meeting of the Oxford County Medical Association was held on January 26th at Ingersoll, when the following officers for the year were elected: president, Dr. A. McKay, Woodstock; vice-president, Dr. McGougan, Thamesford; secretary, Dr. Brodie, Woodstock; treasurer, Dr. Neff, Ingersoll; executive committee, Drs. Ruttan, McKenzie, McKay and A. McLay, of Woodstock, and Dr. McDonald, of Ingersoll; auditor, Dr. Canfield, Ingersoll.

EASTERN COUNTIES MEDICAL ASSOCIATION

A MEETING of the Eastern Counties Medical Association was held at Sherbrooke on January 23rd, under the chairmanship of Dr. Edgar. The following officers were elected: president, Dr. Edgar; first vice-president, Dr. Thibault; second vice-president, Dr. J. A. Darche; secretary, Dr. H. C. Cabana; assistant-secretary, Dr. Fraser; executive committee, Drs. Austin, Camirand, Bachand, and Williams.

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THE ESTABLISHMENT OF TREPONEMA PALLIDUM AS THE CAUSATIVE AGENT OF SYPHILIS, AND THE CULTURAL DIFFERENTIATION BETWEEN THIS ORGANISM AND CERTAIN MORPHOLOGICALLY ALLIED SPIROCHÆTÆ

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CLINICIANS have long recognized the infectious nature of syphilis, but it is only since the inauguration of scientific microbiology by Pasteur, Koch, and their pupils, that the cause of the disease has been more zealously studied. A definite ætiological relation was soon established, step by step, between certain parasitic microörganisms and the morbid processes constantly associated with them. According to Koch, the following conditions must prevail in order that this relation exist. The organism must be found constantly in sufficiently large numbers; it must not be [illegible] other diseases; it must be capable of producing the same patholog[illegible] changes when introduced into a suitable host in pure culture as it does in the disease of which it is supposed to be the cause. Since the laying down of the above requirements by Koch, other important phenomena, such as immunity, anaphylaxis, and allergy, have been proven to become essential factors in determining the ætiological relation between an organism and a given disease. Indeed, only through definite, immunity phenomena were certain pathogenic organisms first recognized as ætiological factors of a number of infectious diseases.

While the causative agents, whether visible or invisible, of

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some of the most important diseases have been discovered and identified, there is still a large number of diseases the causative agents of which are still unknown. There are, however, certain groups of diseases in which the causative microörganisms are doubtless known, since they are constantly found in the same disease, but their ætiological relation cannot be conclusively determined, chiefly because of the lack of adequate methods of isolating the suspected organisms. In other words, a pure culture of the organism is required. This was the situation with Treponema pallidum until I succeeded in producing pathological changes indistinguishable from human syphilitic processes by means of pure cultures of this organism. The search for the causative organism of syphilis had been made by a great many investigators. It was not, however, until 1905, when Schaudinn and Erich Hoffmann discovered a distinct type of spirochæta now known as spirochæta pallida, or Treponema pallidum, that an organism present in sufficient number in syphilis, and never in any other disease, became known to us. This remarkable discovery of Schaudinn and Hoffmann was rapidly confirmed throughout the world, and the presence of this organism in any lesion is accepted as the definite proof of syphilitic nature. In this connexion we must not forget the great service rendered by Metchnikoff and Roux, who had previously shown that the virus of syphilis is transmissible to certain apes and that it does not pass through the pores of a Chamberland filter. The latter fact is important to the investigator, since it shows the virus to be large enough to be seen under the microscope. In spite of the slight refractory property possessed by this organism, Schaudinn was able to see it without staining. He subsequently found a stain in Giemsa's solution, which brought a faint colour (hence called pallida) in fixed specimens. Metchnikoff and Roux next demonstrated this organism in the lesions experimentally produced in apes. Further progress was then made by E. Hoffmann, Buschke, Fischer, Tomasczewski, Bertarelli, Volpino, Levaditi, Uhlenhut, Mühlens, Neisser, Truffi, Mulzer, Flexner, Nichols, and many others, who not only succeeded in demonstrating the enormous number of Treponema pallidum in acquired as well as congenital syphilitic lesions and organs, but also in the tissues (chancre, orchitis, keratitis) of certain lower animals, such as rabbits, that have been inoculated with the human material rich in pallida. The result of these investigations was that the pallida was regarded as the cause of syphilis. The final proof of this, however, depended upon the ability to grow a pure culture of Treponema pallidum.

The pure cultivation of Treponema pallidum opens up many important problems in syphilis. By means of it, we can study the biological characters of the organism more closely and definitely, and investigate the phenomena of immunity and anaphylaxis which are most likely to develop during the chronic course of the disease in man. Since the discovery of the organism by Schaudinn and Hoffmann in 1905, numerous bacteriologists have attempted to cultivate it in artificial media, but no success was reported until 1909, when Scherschewsky announced that Treponema pallidum could be grown in a gelatinized horse-serum together with many other associating bacteria. This has since been confirmed by other investigators, who, like Scherschewsky, have all failed to isolate it. During 1909 and 1910 Mühlens reported that he obtained a pure culture from a mixed growth in Scherschewsky's horse-serum, having employed a mixture of horse-serum and agar for purification. Mühlens carefully stated that his spirochæta was morphologically indistinguishable from the pallida and produced a strong putrefactive odour in the culture. The appearance of growth was similar to that of the culture of spirochæta dentium. Mühlens' culture was absolutely non-pathogenic for monkeys, rabbits, and certain other laboratory animals. Continuing the work of Mühlens, W. H. Hoffmann in 1911 claimed to have cultivated five more strains of the same organism from human lesions by the same process. This investigator does not give any detail of the morphology or biology of his cultures except to state that they were identical in every respect with those isolated by Mühlens. He stated, however, that his strains grow even in plain agar without horse-serum. The cultures of Mühlens and W. H. Hoffmann are anærobic. While Mühlens could not produce any lesion with his culture, W. H. Hoffmann in his recent paper claims to have produced an orchitis in the rabbit with his cultures, a condition which he could not accomplish at the time of the publication of his first report. Whether this organism with the morphology of spirochæta pallida, easily cultivatable in a mixture of horse-serum and agar and capable of producing a fetid odour in its growth, is the real pallida or a spirochæta resembling the pallida merely in morphology, will be shown later when we discuss the mouth spirochætæ cultivated by me. In the meanwhile, Galasesco and Brückner in Roumania, and Sowade in Germany, succeeded in producing characteristic lesions in the rabbit by means of impure cultures of the pallida grown in Scherschewsky's horse-serum.

Independently of these investigators and employing entirely different methods, I succeeded in 1910 and 1911 in obtaining several pure cultures of Treponema pallidum and one of Treponema pertenue (yaws) from the orchitis produced in rabbits by transmitting the spirochætæ from human cases. The reason for choosing the orchitis material of the rabbit was to exclude the possibility of cultivating another spirochæta resembling the pallida and confusing it with the latter. The orchitis material contains almost pure pallida and no other similar saprobiotic forms, such as the dentium, which must be taken into consideration when isolating the pallida from a chancre or condyloma in human cases. I will not describe here the exact technique for the pure cultivation of the pallida; I refer the reader to my papers on this subject. With six different pure strains of the pallida, I was able to reproduce typical orchitis in the rabbit. After familiarizing myself with the cultivated pallida, I proceeded to isolate the organism directly from human chancres, condylomata, and skin papules, the mouth lesions being avoided on account of the presence of the dentium which, as will be shown, is difficult to differentiate from the pallida in morphology. Thus far seven different strains of the pallida have been isolated and are kept growing in a pure state. The morphology and biology of these agree with those of the strains previously isolated from rabbit orchitis, and are found to produce characteristic lesions of the skin in certain monkeys. The Wassermann reaction developed also after successful inoculation.

The general characteristics of the cultivated pallida are: (1) strict anærobiosis; (2) requirement of fresh sterile animal or human tissue and serum (or ascitic fluid) in the culture medium for growth; (3) almost transparent, diffuse growth, seldom forming a discrete colony; (4) no coagulation of serum or tissue constituents; (5) no production of any putrefactive odour in growth; (6) optimum growth in a weak, alkaline reaction and at a temperature of about 37° C.; (7) beginning of growth after several days and its continuation for several weeks, majority of the organisms retaining their motility; (8) the presence of a long, straight, or finely curved, delicate flagella-like projection at one or both ends; (9) longitudinal division.

For comparative purposes I have also cultivated for the first time two different species of common mouth spirochætæ; namely, one heavier, and one delicate type, designated by me Treponema macrodentium and microdentium, respectively. The microdentium was known as spirochæta dentium (Koch) before cultivation, and the macrodentium bore no particular name, although it was called by some authors medium form. Before their isolation in pure cultures, it was not known whether both forms were varying sizes of the same organism or two different species.

The most important of the two dentiums is the microdentium, because this organism is almost impossible to differentiate morphologically from the pallidum, and hence it might be confused with the latter. Only those experienced with both cultures may detect certain differences in morphology. On the other hand, nothing is easier than to pick out the microdentium from the pallidum when both are compared in cultural characteristics. The following points are sufficient to distinguish the two: (1) the microdentium grows more easily and rapidly and forms more discrete and denser colonies than the pallidum; (2) it is less strictly anærobic; (3) it produces a putrefactive odour; (4) it grows without the addition of a fresh sterile tissue to the media; (5) in an old culture the tissue, if added to the media, assumes a dark brown to blackish colour; (6) in a good growing fluid culture the serum water may be loosely coagulated after several weeks. The macrodentium is more easily differentiated from the pallidum by its irregular curves, peculiar vibrating motility, and its general appearance, although in growth it resembles the pallidum closely, especially as it produces no odour.

In view of these facts, one wonders how the so-called pallidum strains of Mühlens and W. H. Hoffmann can be distinguished from the microdentium with which they agree in every respect. Furthermore, their pallidum strains are entirely different from the author's in most fundamental, biological characteristics. This question is also raised by Erich Hoffmann in his latest work, in which he further points out that in any syphilitic organ containing enormous numbers of the pallidum there is no odour, hence the cultures of Mühlens and W. H. Hoffmann must contain, besides the pallida, certain spirochæta capable of producing the characteristic putrefactive odour. But, as their culture medium contains no fresh tissue and their strains continued to grow through numerous transfers, whereas no pallida can grow under the same conditions, it is doubtful whether their cultures contained any pallida. It is more probable that they have been dealing with the microdentium, or at least a spirochæta indistinguishable from it in cultural properties.

In order to use the pure culture of Treponema pallidum for advancing our knowledge in the study of syphilis, we naturally turn to the field of immunity and anaphylaxis. I will not discuss the question of immunity here, but I will limit myself to the phenomenon of local anaphylaxis, or allergy, as termed by von Pirquet, who first discovered similar reaction in tuberculosis. Syphilis, like tuberculosis or certain other chronic infectious diseases, confers upon the patient a hypersensitive condition of the tissues, that is, a skin allergy is established after a certain period in the course of the disease. This condition is easily detected by introducing a small quantity of the devitalized pure culture of Treponema pallidum (luetin) into the epidermis. If the allergy is already present, the inoculation of the luetin is followed by a marked inflammation at and about the site of injection, comparable to von Pirquet's tuberculin test for tuberculosis. While referring the reader to the detailed report, I may state briefly that I found the allergic state of skin in syphilis to be present in almost every case of the tertiary stage and in a large percentage of latent and late hereditary syphilis. It was almost always absent in primary and very early secondary syphilis, in which stages this condition may be brought out by means of an energetic anti-syphilitic treatment. It is especially striking to observe the appearance of allergy in the cases of secondary syphilis after the injection of salvarsan. This is apparently due to the destruction of a large number of Treponema pallidum in the human body by this powerful spirochætocide and subsequent absorption of the pallidum substances by the entire system, including the skin. That this is true is shown by the fact that even rabbits can be made allergic through repeated injections of the dead or living pallida, as was demonstrated by me. Normal individuals or those suffering from non-syphilitic diseases never give the reaction.

The diagnostic value of the luetin test has its own sphere, as have other diagnostic methods. It does not give any reaction until the allergic state of the skin dvelops, but after its appearance it seems to persist until the probable eradication of the disease from the system, and remains uninfluenced by the ineffective treatment. In this respect the test appears to have a prognostic value, which neither the negative clinical symptoms nor serological examinations possess. During the late stage of syphilis, when visceral organs are affected, and the clinical and serological examinations yield no decisive diagnosis, the luetin test assumes an important position in determining the nature of the affection. In other words, the early stages of syphilis can best be diagnosed by the demonstration of the pallidum, by the clincal manifestations, and by the serological examinations; the late stages by resorting to the luetin test. I have met with a number of cases of hereditary syphilis in which, despite the strong serum reaction and extensive clinical manifestations, no luetin reaction was obtained. I consider these cases of a bad prognostic character, as this only indicates that the disease is too severe to enable the patients to respond to the infecting agent by the development of allergy. Thus, it will be seen that the intensity of the infection is, with certain exceptions, in direct ratio to the severity of the clinical and serological manifestations; while the luetin reaction indicates either that the infection is well borne by the patients or that it is under a better control, due to the treatment. Thus it is natural to find cases with a negative Wassermann reaction, and positive luetin test, although both reactions are found coëxisting in many instances.

The above estimate of the luetin test is derived from my observations of several hundred cases, but its ultimate significance and proper utilization in practice will be demonstrated only through careful observations made by clinicians in different fields of medicine in the future.

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SALVARSAN: A YEAR'S EXPERIENCE

REPORT OF TWO HUNDRED AND FIFTY CASES

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INTRODUCTORY: In a previous communication before this society, with Dr. Adami, we reported upon twenty-six cases in which we had used salvarsan. Since that time we have administered the drug to an additional 221 patients, making a total of 247.

While barely a year has elapsed since we treated our first case, and while we realize that the last word on salvarsan, or indeed on any drug used in the treatment of syphilis, cannot be uttered before several decades have elapsed, the present moment seems opportune for detailing to the society the conclusions arrived at in the course of one year's work. Some illusions have been dispelled, but, on the other hand, many convictions, expressed rather timorously in the first communication, have been strengthened by our further experience.

Methods of Administration: Without going too much into detail as regards methods of administration, where one stands out so preëminently, it will suffice to say that there are three ways: (1). Subcutaneous; (2). Intramuscular; (3). Intravenous. The drug may be given as acid or alkaline solutions, and as neutral watery or oily suspensions. The acid solution is toxic, dangerous, and unjustifiable. The alkaline solutions may be given by any of the three methods, while the suspensions may be given subcutaneously or intramuscularly.

The subcutaneous or intramuscular methods, though possessing certain advantages, particularly the intramuscular injection of an alkaline solution, are followed by certain symptoms which render their use less desirable than the method of our choice, the intravenous. Salvarsan locally acts as a necrotic and Martius (Frank-

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furt) has shown that every subcutaneous or intramuscular injection is followed by more or less necrosis, which, if contiguous to important structures, may cause undesirable, even dangerous symptoms, as regards the comfort and life of the patient. Necrosis of the skin naturally occurs more frequently after the subcutaneous route, but does occasionally follow the intramuscular. These necroses are very refractory to treatment, and take considerable time in healing. Fortunately, owing to our early predilection for the intramuscular method (acting on the advice of Professor Flexner) and our early adoption of the intravenous method, we have had no superficial necroses.

The pain, which is an almost invariable symptom, is probably due to this irritative and necrotic action on nerve tissues, which action is responsible for the nerve paresis and paralysis, which occasionally occur. The pain, in one of our cases, persisted most severely for four weeks, owing to which the patient was unable to move about even in bed. Muscular disability from the infiltration and induration caused by the drug, may persist for long periods, and one of our patients, injected in January last, is to-day, nearly ten months later, unable to cross the affected leg over the other.

The great advantage claimed for these two methods is that an arsenical dépôt is formed, on which the organism draws. It has, however, been shown that after intravenous injection, far from the arsenic being excreted as rapidly as first observations seemed to show, arsenical dépôts are formed in the internal organs, so that the advantage applies equally to the intravenous method of administration. Our own experience of the two former methods and the much larger experience of the European workers was sufficient to convert us to the use of the intravenous method, which we have used exclusively since January, 1911, and in over three hundred injections. So much has the use of the intravenous method become universal that Finger recently quoted Ehrlich as saying that "606" should not be given unless it were given intravenously.

While the intravenous administration is the best, as regards the comfort of the patient and celerity of action, certain disagreeable by-effects are associated with its use. Our earliest cases showed a certain group of symptoms, fortunately of short duration, appearing almost immediately after injection, or delayed three to six or even as long as twenty-four hours. Rise of temperature, chill, nausea, vomiting, diarrhœa, headache, backache, and general malaise, were present in varying degrees in a majority of our cases, the severity of the disease or the amount of the drug seeming to have no direct relation to the after-effects. With an improvement in technique these symptoms are being so reduced that the greater number of injections are now being given without any reaction whatever, and where symptoms are present they are much milder than formerly. Wechselmann (Berlin), whose experience reaches to over six thousand injections, has studied the question, and concluded that most of the after-effects were due to the presence of saprophytic organisms, dead or thermo stabile, in the distilled water commonly used in making up the salt solutions, and that they are, in fact, errors of technique.

TECHNIQUE: As has been remarked the intravenous method is followed exclusively by us and it may be advantageous to briefly describe our technique. Rigorous asepsis is a *sine qua non* in all the steps of the operation. The apparatus should be the simplest possible. There are two possible methods: (1) Gravity; (2) Syringe. Both have their adherents and as many complicated forms of apparatus and needles. The simplest, in our opinion, is the best. We have used the gravity method, and in its simplest form. A 300 c.c. cylindrical container, which may be held in an assistant's hand or attached by a burette holder to an upright, is the receptacle of the drug. To its lower, narrowed extremity is attached a rubber tube about four feet long, with a glass insert, six inches from the needle. The needle is a medium sized aspirating one, moderately sharp and with a short bevel. An artery forceps serves as a clamp for the tube. These, and all the glassware used in making the solution of the drug, should be previously carefully washed and sterilized by autoclave.

The drug should be given in a dilute alkaline solution, normal saline being the diluent of choice, not distilled water, in a quantity, 40 to 50 c.c. for every ·1 gramme of the drug. The saline solution should be prepared from freshly distilled water, using Merchk's NaC1. C.P., and then autoclaved. If the solution is to be kept, the flask must be carefully sealed.

The desired quantity of the drug is completely dissolved in 40 to 50 c.c. normal saline solution, solution being hastened by stirring with a glass rod. Solution being complete, sufficient 15 per cent. sodium hydrate solution (previously filtered and autoclaved) is added drop by drop to convert the acid solution first into a neutral precipitate, and secondly, the latter into an alkaline solution. Sufficient saline is added to make the total quantity conform to the rule given above. The temperature of the injected fluid should be about 105° F. Filter the fluid before injection.

The patient is placed in a recumbent position, a vein of the forearm or elbow is selected and placed in a good light. A bandage about the arm above the vein renders the vein more conspicuous. Clenching the patient's fist tightly and percussion of the veins are additional aids in bringing out a refractory vein. Thoroughly cleanse and sterilize the site of injection, alcoholic bichloride being better than iodine disinfection, as the iodine obscures the vein and blunts the needle. Now pour 50 c.c. saline solution into the container, see that the solution fills the tube and needle, that all air is expelled and there is no obstruction to the flow. Clamp the rubber tube, and insert the needle directly into the vein. This is possible in 98 or 99 per cent. of cases. Only in very fat people is it necessary to make a skin incision. The needle within the vein, test it by removing the constricting bandage and the clamp. A moment's observation will suffice. If the level of the fluid in the tube does not fall, or a swelling at point of injection results, remove the needle and try again, either on the same or other arm. Once the fluid runs satisfactorily, without any escape into the perivenous tissues, pour in the salvarsan solution, the container being elevated about three feet above the vein. Stoppage of the flow may be due to several causes; obstruction in the needle by blood clot, if back flow has resulted, or a wounding of the vein from the inside, resulting from unwary movements of the patient or operator with resultant perivenous infiltration. In the latter case, pain and swelling result. An obstruction in the needle may be removed by milking the tube. If infiltration is occurring the needle must be removed and a fresh vein selected. Such an accident should not occur, for it has all the unpleasant and painful features of a subcutaneous injection. All the fluid out of the tube, a few c.c. of saline may be given, the needle removed, and a sterile pad applied with pressure to prevent oozing from the vein and formation of a hæmatoma. Performed properly there are no local after-effects of discomfort.

Ambulant Treatment: It is advisable and preferable that the patient should be in bed and remain there for twelve to twenty-four hours afterwards. But the exigencies of an out-patient practice have led us to give intravenous injections *ambulant*. The patients, after the injection, are advised to go home at once and stay in bed for the rest of the day. During the past summer and fall, nearly two hundred intravenous injections have been performed in this way without any bad results.

Dosage: As a routine we have shown that for the adult male or female, a dose of ·6 grammes is well borne. Two and three injections have been given to the same patients without any apparent sensitiveness.

CASES: To summarize the cases treated, there have been of,

I. Syphilis	26	cases.
II. Syphilis	131	"
III. Syphilis	48	"
Latent Syphilis	18	"
Cerebral Syphilis	7	"
Congenital Syphilis	2	"
Tabes Dorsalis	9	"
General Paresis	1	"
Psoriasis	2	"
Carcinoma	1	"
Sarcoma	1	"
Amœbic Dysentery	1	"

or 247 in all.[*]

One of the earliest illusions dispelled about salvarsan was the so-called *therapia sterilisans magna.* And at the outset we can state very positively that one injection of salvarsan cannot in the vast majority of cases be depended upon to cure syphilis.

Apart from this, our opinions as to the effects of the drug have not greatly altered. We have continued to note the same prompt disappearance from the lesions, when present, of the spirochætæ pallidæ, whose growth in pure culture and reproduction of syphilis in rabbits, if we accept Noguchi's work, fulfils the final postulate of Koch.

Particularly pleasing are the results in primary syphilis, treated before the outbreak of the generalized symptoms. Of our twenty-six cases, we have been able to follow nineteen. In eighteen, secondary symptoms were entirely aborted, while the nineteenth has not yet passed the time in which secondaries might reasonably appear. In two cases there have been recurrences in the site of the primary lesion, both cases where this was extensive and extremely indurated. One of these cases yielded promptly to a second injection, the other was injected in England with result unknown to us. These two instances of the difficulty of influencing densely indurated lesions are the strongest argument possible for the necessity of excising the primary sore, wherever its site renders this possible. We shall recur to this point in speaking of abortive treatment.

Of secondary syphilides, the mucous patches and condylomata have yielded promptly, with one exception—a case of ripe secondaries, which received an intramuscular injection of ·5 grammes in neutral suspension, one of our early cases. The macular lesions have disappeared rather slowly, while the papular lesions have shown themselves rather resistant, especially the larger, tougher ones. Pigmentation usually follows, disappearing very slowly.

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[*] Since writing this we have injected eighty-four further cases, or 331 in all.

Gummatous lesions have given very prompt results, except in large ulcerations of the lower extermities where other factors, varicose, circulatory, etc., have perhaps played a part. Nothing more striking has been observed than the rapid disappearance of the palmar and plantar syphilides, lesions notoriously resistant to mercurial treatment.

In striking contrast to the cases treated by salvarsan is a group of cases in the genito-urinary clinic of the Montreal General Hospital, treated in the chronic, intermittent manner with mercury and potassium iodide for the past two years. While, of course, many of these are under control, there are not a few who still have small resistant lesions even at the end of two years. Some of the severest of these have been selected for salvarsan injection, and are among our most striking successes.

TABES DORSALIS: Neither in tabes nor general paresis can we look for much improvement of a permanent nature. In tabes we have seen a temporary improvement in one or two. One, who from his ataxia was unable to perform his ordinary labours, was comparatively well for months, but has again relapsed.

CEREBRAL: Cerebral syphilis has shown us some brilliant successes. One woman had been ill for a year: headaches, vomiting, double vision, dizziness, slowness of speech, dulness of intellect, and fainting attacks. On her admission to the hospital in June last, in the service of Dr. Lafleur, she was in a very dangerous condition, with incontinence of fæces and urine and a double specific choroido-retinitis. An injection of ·5 grammes salvarsan intravenously brought about a marvellous change, and the patient was discharged a month later, feeling quite well, free from headaches, dizziness, and vomiting. Another, a hemiplegic man, in Dr. Finley's service, is to-day, eight months after, working as a coal carter, carrying one hundred pound bags of coal up three flights of stairs, and his only complaint is of being a little out of breath at the top. In one moribund case, death followed in two days, apparently from pneumonia. This is our only death in the series, but it ought not really to be debited to the drug.

CONGENITAL: In congenital syphilis, two cases have been treated, both with chronic osteitis, suffering from severe pains. These have been free from pain eleven and twelve months, respectively. One had an interstitial keratitis which cleared up after the injection.

Eye: As to the value of salvarsan in eye conditions, our experience has been too limited to speak authoritatively.

Relapses: Of seventy cases of primary, secondary, or tertiary syphilis, which we have been able to follow, seven have relapsed, in two cases after two injections, in five after one only. It has been difficult to keep in touch with all the cases, and it may be that all of the relapses have not returned to us. They all belonged in the very early period of our work with salvarsan, at a time when we were perhaps still exulting in the illusion of a *therapia sterilisans magna.* Now, with the disillusionment, we are attempting to anticipate the relapses by repeating salvarsan treatment. Comparing corresponding results under mercurial treatment, even if the immediate symptomatic improvement had been as marked, which one would hardly expect, the relapses after one or even more courses of mercury are greater in number and severity.

Nerve Recurrence: Most important, from the critical standpoint of salvarsan, is the much discussed "*neuro-recidiv*" or nerve recurrence, that is to say, the occurrence of a nervous lesion, generally in certain cranial nerves, particularly those of the eye and ear, usually in secondary cases, four to six or more weeks after the injection of the salvarsan. Nearly all are agreed that the lesion is a syphilitic one, the point at issue is the part played by salvarsan in their causation. A section of the Vienna school, led by Finger, has made a rather strenuous attack on salvarsan, alleging that these nerve recurrences are more frequent than in the days of mercurial treatment, and are so dangerous as to contra-indicate the use of salvarsan except in mercury resistant cases. Mucha, in a recent report from the Finger clinic, groups all the cases with any suggestion of a nerve recurrence and finds they number 10 per cent. in their series of five hundred.

Ehrlich asserts that these lesions are caused by isolated nests of spirochætes which have escaped the action of salvarsan, and by reason of the anatomical disadvantages of the part, e.g., nerves passing through long, bony canals, are *loca minoris resistentiæ;* are, in fact, syphilitic recurrences, demanding continued antisyphilitic treatment. Further, Benario has studied the records of a large series of cases, and finds that these syphilitic nerve recurrences were as frequent after mercurial treatment. Wechselmann (Berlin) and Fehr assert that 2 to 3 per cent. of all early secondaries show eye lesions, not necessarily noted by the patient. The unusual prominence given to the question results from the more searching examinations given to salvarsan-treated patients, with the result that the syphilographer is gleaning information about the special senses, formerly only appreciated by the specialists in those departments.

In this series of two hundred and fifty cases, there are only two which can be looked upon as nerve recurrences. One of double optic neuritis, with opacities in the vitreous appearing four weeks after an intravenous injection, and one of unilateral facial paralysis appearing about three months afterwards. In the first case the lesion was not remarked by the patient, and was treated by a second intravenous injection, with result, unfortunately, unknown. The facial paralysis improved spontaneously. She has had a second injection and is now free from signs.

Two of the cases had an optic neuritis at the time of the first injection. One was a secondary case treated in the clinic with eight mercurial injections; the other was a fresh, untreated case.

An interesting sidelight on the controversy is furnished by the Jarisch-Herxheimer symptom, first noted after mercurial treatment, of which we have observed several cutaneous instances. This has been noted in connexion with the nerves of the eye and ear, when a lesion flares up immediately following treatment, only to subside after a transient course. If we are to regard the Jarisch-Herxheimer phenomenon as a congestion of a focus containing spirochætes, then the true syphilitic nature of the nerve recurrence is something more than merely probable. In any case, our own results are in accord with those, like Wechselmann with his experience of over six thousand cases, who found nothing to contra-indicate the use of salvarsan.

Two cases of herpes zoster have been observed following the use of the drug, and numerous cases of herpes labialis. Jaundice followed in two cases. In two pregnant women, the drug was given without causing any disturbance; one of these has recently given birth to a healthy child, with a negative Wassermann reaction.

The effect of salvarsan on the Wassermann reaction does not differ materially from that of mercury. If anything it is stronger. The positive reaction becomes negative in an average time of about six weeks. Looking upon the Wassermann reaction as a symptom of syphilis, we are not surprised to find relapses preceded or accompanied by a change of a negative into a positive reaction. It is our intention to go into the subject of the Wassermann reaction in a following communication. Here the details would lead us too far afield.

Coming to the all important matter of treatment, it is a little difficult to be dogmatic. At the outset, we wish to lay stress upon the necessity of diagnosing syphilis early. With the discovery of the spirochæta pallida to aid us, there is no reason why the initial lesion should not be diagnosed long before the outbreak of secondary symptoms. The treatment of syphilis cannot be commenced too early, and if abortive treatment is to be successful, early diagnosis is an absolute *sine qua non.*

Our own experience has led us to adopt a certain routine. All cases receive an immediate intravenous injection of salvarsan, repeated in from two to three weeks. In primary cases, in addition to this, we advise the excision of the sore, where this is anatomically possible, where impossible, the institution of any local treatment which favours a free circulation through the whole lesion, in order that all the spirochætes may be rendered accessible to the drug. Measures to be recommended for this purpose are curettage and hyperæmia by arterial or venous congestion. Further than this, the course of treatment must be largely expectant, depending upon clinical signs and the behaviour of the Wassermann reaction. Should clinical signs or a positive Wassermann reaction persist, treatment must be continued. Should clinical signs appear at any time or a negative Wassermann reaction become positive, treatment must be instituted. For ourselves we would unhesitatingly recommend a continuance of salvarsan. There is, however, no objection to combining mercurial or potassium iodide treatment with salvarsan. Our own experience, and that of others, I may add, has shown that the three remedies are not imcompatible; some have even claimed that the action of one or the other—we are speaking particularly of salvarsan and mercury—renders the spirochæte more amenable to the influence of the other.

Whatever the future may show, we are agreed that the Wassermann reaction must be regarded as a symptom of syphilis and combatted as such. For the same reason, and particularly in the later stages of latent syphilis, the Wassermann reaction must be looked upon as our most valuable adjunct in the treatment of syphilis.

Salvarsan has been shown to be particularly valuable in cases which resisted mercury. Further, the symptomatic improvement after salvarsan is more marked than after mercury. This fact alone in rendering virulent syphilitic lesions innocuous, is a matter of immense social value to the community.

The advent of salvarsan in no way releases us from the responsibility of keeping our patients under surveillance for two to three or more years. For some cases, doubtless, the rules formulated by the master syphilographers, Fournier and Jonathan Hutchinson, are too severe, especially when a primary lesion may be diagnosed even on the day of its appearance and treatment instituted forthwith. For other cases the limits of four and five years may have been insufficient.

While we have outlined an expectant treatment depending on the Wassermann reaction, it is not improbable that the future may demand a return to an intensive, chronic, intermittent treatment, with salvarsan alone, or salvarsan and mercury combined. There is no doubt that in the present state of our knowledge this is the safest course.

While we look to the future very optimistically, we must, as far as salvarsan is concerned, feel our way and proceed very cautiously, that false hopes and vain illusions may not be followed by deep and lasting regrets.

GASTRIC CARCINOMA

BY W. J. MACDONALD, M.D., ST. CATHARINES

GASTRIC carcinoma, one of the most formidable of all internal maladies, is, in this portion of the continent at least, steadily on the increase. In order of frequency, it stands second only to cancer of the uterus. There is to-day probably no pathological lesion so fatal in its ultimate results, which, at the only time when any hope of recovery can be offered, presents such difficulties in diagnosis. Many a doom is sealed before the patient becomes aware that there is really anything serious the matter. The proof, however, which is fast accumulating day by day, that in at least a great majority of cases, the seed bed of gastric carcinoma is the indurated edges of an old peptic ulcer, is shedding that ray of light which may enable us more frequently in the future to discover and radically remove this dread disease while yet there is time to effectually save life. One thing is certain, that when carcinoma in this region is discovered and radically removed in the early stage, life is saved. To be diagnosed before metastasis commences to produce involvement elsewhere, is to-day the acme of internal diagnostics, and the physician making such early diagnosis does more to save the life of his patient than the surgeon who effectually removes the disease.

Much practical knowledge has been gained through laboratory research, but even more has been achieved by clinical and surgical methods. Surgery has conclusively taught us that at least some of the predisposing conditions may be effectually removed, and by thus operating during this precancerous state, usually a typical history of long-standing ulcer, the development of the cancerous state may be prevented.

Such, indeed, is one of the various results aimed at in operation for the radical cure of gastric ulcer, but the day has not yet arrived when the diagnostician may determine which ulcer is likely to degenerate into cancer, and which not. In the meantime, we must strive to so improve our diagnostic methods that we may speedily reach the time when all gastric carcinomas may be discovered and removed at a time when practically all lives may yet be saved.

SYMPTOMS: In obtaining the history of patients suffering from gastric carinoma, three distinct types may be elicited:

1. Those with a history of intermittent stomach trouble,

which may have covered many years, or been of much shorter duration.

2. Those with a long history of constant gastric disturbance.

3. Those who have, heretofore, enjoyed the best of health, and whose present illness attacked them unawares, without the slightest previous warning.

The first type of history is by far the most common,—the typical, clinical condition presented by the long-standing, chronic, gastric ulcer. Many patients, especially in the later stages of carcinoma in this region, present a typical facial expression very significant of this disease. The presence of this dread malady may indeed be frequently foretold by this typical facial expression. Pallor about the mouth and nose, the face wan and thin, the eye anxious and penetrating in an endeavour to read the opinion of the physician, all combine to give that pinched look, its chief characteristics.

The mental attitude, as thus depicted in the features, is one of hopelessness. The patient is apparently possessed of the idea of impending danger, and is usually resigned to his fate, presenting the appearance of calm dejection. Weight is lost rapidly, a feeling of lassitude and extreme weakness pervades, and anæmia quickly develops. There is often a sickening pain in the region of the epigastrium, or rather the feeling of a strange, indescribable distress which may or may not be directly referable to meals. The fears of the patient, as portrayed by the anxious expression so frequently seen, are well grounded, for in every case when cancer has once developed in the stomach, the condition is one of utter hopelessness unless relieved by early surgical intervention. In the absence of such intervention, the progress is steadily downward, with seldom any recession in its progress.

The symptoms of gastric carcinoma will very frequently cover many years, from the earliest commencement of the precancerous state to the fulmination of the disease, cancer itself. This early history may be conveniently divided into three, separate stages. The first stage is marked by a particularly good appetite, the presence of pain from two to four hours after meals, a feeling of excessive acidity, as manifested by an increasing bitterness in the mouth, and finally an occasional belching of gas and sour eructations. These symptoms will disappear entirely, and for some time the patient will enjoy the best of health, and so complete may be the apparent cure that he may even entirely forget he has had any stomach disorder at all.

After several such attacks, or perchance a period of quiescence for a longer or shorter period, the second stage is ushered in. It is practically a repetition of the first, only in a more aggravated form. The vigorous appetite, so noticeable at the earlier period, has somewhat disappeared, the keen relish for food is lost, and the pain, so noticeable before, now appears much earlier after meals and in a much more intensified form. Gas and sour eructations are common, and for the first time appears the vomiting of sour, bitter, acrid material, often containing food particles. This vomiting is invariably followed by a sense of great relief, so much so, that many patients resort to the use of the stomach tube in order to obtain the same relief from distress. Loss of weight now commences to appear, though at the culmination of this present attack the lost flesh is rapidly regained.

The third stage is but a further aggravation of the former symptoms, and may only appear after several attacks such as that just noted. It is marked by a rapidly decreasing appetite, and in many cases an absolute fear to partake of any food at all, so great is the distress occasioned afterwards by the pain, gas, sour eructations, bloating, and vomiting. The period of relief produced by food becomes much shorter. The obstructive symptoms are now, as a rule, well marked. As the patient passes from one stage to the next, constipation gradually becomes more obstinate. Blood appears for the first time in a test meal.

The transformation from the third stage to the presence of cancer is extremely difficult to determine. It is when this period is more easily read that more lives will be saved, for it is the signal indication for immediate operation. Stage three is still ulcer; stage four dread cancer. Any peculiar marks of differentiation between stages three and four are exceedingly difficult to locate. The regurgitation, so acid and bitter in the earlier stages, loses to a great extent its apparent acidity, but becomes much more copious. Vomiting is excited more by liquid food, in this later stage becoming intensified, irregular, and copious. The vomitus also contains much more frequently large quantities of blood partly digested, thus presenting the classical symptom of "coffee ground" vomiting. Gas and bloating persistently increase the patient's discomfort. Pain, which heretofore, was periodical, now becomes much more constant, is of a dull, heavy, sickening character, is less localized than formerly, and will not so readily yield to pressure or the partaking of food. As cancer progresses the pain becomes more diffuse.

The whole composite picture is one which cannot fail to impress. The pale, anxious features, the pinched expression and languid air, the rapid loss of flesh, the character and persistence of the pain and vomiting, all combine in impressing the fact that the stage of ulcer has passed and cancer has at last fastened its hold upon the stomach.

A complete examination of the stomach contents should invariably, and in some instances repeatedly, be made, for therein may lie much confirmatory evidence concerning the presence of cancer. The secretory activity of the gastric glands is determined by microscopic and chemical tests of samples of stomach contents obtained at the height of digestion. The time required for the digestive process to reach its height will depend entirely on the quality and quantity of the test meal administered. An ordinary full diet of meat and vegetables will require much longer than a simple one of readily digestible foods. Should vomiting chance to occur at the correct time, the vomitus may be utilized instead of obtaining the stomach contents in the usual manner through the stomach tube, but it is so rarely that vomiting is induced just when the process of digestion is at its height, that it must never be relied on. Then again, the act of vomiting may be the result of some disturbed condition of the stomach, rendering the contents chemically different, and thus producing in the tests a condition entirely foreign to the actual. It is, therefore, always better to employ some form of test meal for the purpose of obtaining samples of the stomach contents, from which accurate examinations may be made.

The best results and the most accurate tests can usually be made after a considerable fast, therefore the morning should be chosen for the administration of the test meal. Some clinicians are in the habit of employing a thorough, gastric lavage before giving the meal, but in the majority of cases a fast over night will produce equally good results. In cases of well-demonstrated pyloric obstruction, however, lavage will be of material benefit by removing all undigested food particles. Any food particles remaining in the stomach twelve hours after any meal may be regarded as positive evidence of pyloric obstruction.

Probably the best known and most convenient meal, and one which is almost universally used throughout America, is that recommended by Ewald and used exclusively by him in his clinic in Berlin. It consists merely of a slice of stale bread and three quarters of a pint of weak tea without either milk or sugar. Such a meal as this will usually have reached the height of digestion in one hour, and it is then it should be removed by stomach tube for analysis.

But one other test meal, that of Boas, is used at all extensively. This is a non-lactated one, and given for the purpose of demonstrating the presence of lactic acid in suspected cases of cancer of the stomach. Before giving this meal, Boas advises the washing out of the stomach at bedtime in order to remove all traces of food, then, on the following morning, give from six to eight ounces of thin, though well cooked, oatmeal porridge, served without either milk or sugar. As in the case with the Ewald breakfast, this is removed in the usual manner in one hour. In devising this meal the contention of Boas was that ordinary food, such as bread or rolls, would contain enough milk to contaminate the future stomach contents with lactic acid.

Originally the contention of Boas was that the presence of even a small amount of lactic acid, be it ever so small, was strong evidence in favour of the presence of cancer, but this has on many occasions been proven incorrect. The presence, however, of a large amount of lactic acid, when not introduced with the food, must be admitted as strong evidence of the presence of cancer. By any of the ordinary tests, lactic acid cannot be demonstrated in the presence of free hydrochloric. Apart from the presence of carcinoma, the only condition likely to produce an excessive amount of lactic acid is one of those exceptionally bad forms of gastric catarrh producing stagnation with its accompanying excessive fermentation.

No diagnosis should under any circumstance be based on the result of the findings of one test meal. Several meals should be given and the results compared. For example, a person who has been in the habit of eating a large breakfast, probably consisting of a beefsteak, fried potatoes, one or two slices of bread, and a cup of tea, will be much more likely to have an excessive amount of H.C.L. when he partakes of a paltry Ewald breakfast. If, however, this meal should be given repeatedly, for at least three times, a fairly accurate result may be obtained. It is also a well-known fact that some persons habitually secrete more H.C.L. in the morning, others in the afternoon or evening, so that it becomes necessary, in order to reach the most intelligent opinion, to make tests at different parts of the day, and on the combined results to form conclusions.

In the majority of cases of gastric carcinoma there is early absence of hydrochloric acid. There was a time when this absence would be regarded as almost pathognomonic of cancer, but this is not now the case, and the knowledge of its absence is only of value when considered in conjunction with other symptoms. The absence of hydrochloric acid is only one of many symptoms which must be considered in conjunction, when determining the diagnosis in each individual case.

Although free hydrochloric acid is almost invariably absent in carcinoma of the stomach, even in its earliest stages, yet its absence can be considered as no more than a suggestive symptom. Various other conditions will also provide such an absence, hysteria, neurasthenia, some cases of chronic gastritis and pernicious anæmia. It is even possible in some instances for H.C.L. to be entirely absent at one examination, and to be present even in excess at another some days or even a few hours later. A variation such as this, however, could only be accounted for by the exertion of nervous influences.

Even although free hydrochloric acid is usually absent at an early stage in the development of gastric carcinoma, yet it must be borne in mind that malignancy will, and frequently does, originate and develop in the presence of free H.C.L., sometimes even when this H.C.L. is being secreted in an excessive amount. The presence of hydrochloric acid must never be taken to indicate the absence of cancer.

The absence of hydrochloric acid in the gastric secretions may indicate the development of malignancy elsewhere. Some observers have found it almost as uniformly absent in cancer of the other organs, as where the stomach was involved. In gastric carcinoma the secretion of hydrochloric acid is always restored as soon as a portion of the stomach is resected, and very frequently so by free drainage of the stomach as accomplished by gastro-enterostomy in those cases in which the disease has progressed so far as not to permit of effectual removal.

The existence of gastric carcinoma is strongly emphasized by the constant presence of lactic acid in an excessive amount. True it is that other conditions will produce lactic acid, but seldom will its presence be constant or in excessive amount. Any obstruction to the pyloric outlet stasis, and consequent fermentation, will foster the presence of lactic acid, and as from 80 to 90 per cent. of such cases of obstruction are caused by carcinoma, the presence of lactic acid speaks strongly for its existence. Its absence, however, is no proof of the absence of cancer.

The Oppler-Boas bacillus, first described by Boas and later by Oppler, is usually found in the presence of constant lactic acid. Lactic acid is never present in free quantities until after the complete disappearance of H.C.L., consequently the bacillus just mentioned is never found in the presence of free H.C.L. The presence, therefore, of the Oppler-Boas bacillus is of doubtful value from a diagnostic standpoint, as its presence is rarely demonstrated until late in the disease, when practically all hope for cure has vanished.

Enlargement of the left supraclavicular glands is likewise a late indication of the presence of gastric cancer, and also is usually an indication that the disease has already progressed too far to permit of any radical removal.

Blood in the stomach contents is a valuable sign in diagnosing gastric carcinoma, especially when considered in conjunction with other symptoms. Persistent occult bleeding, especially when associated with defective secretion and motor insufficiency, as demonstrated by the retention of gastric contents, is strong evidence in favour of cancer, while persistent absence of blood from both the stomach contents and feces, may be used as evidence against its existence.

The motor function of the stomach remains in many instances unimpaired until late in the disease. In testing for motor insufficiency, the test meals should be administered under identical conditions, and the stomach invariably washed out after the withdrawal of the meal, to make certain that all food particles have been removed.

A more valuable sign in the early diagnosis of gastric cancer is the albumen test, as practised by Dr. Kuttner, for many years Ewald's first assistant at his clinic in Berlin. He emphasizes this albumen test, if positive, as absolutely pathognomonic of cancer, and in those cases where it appears early it is invaluable.

The plan employed by Kuttner is to give the patient a full fluid meal, devoid of albuminoids, in the middle of the day, and then in the evening to thoroughly wash out the stomach. On the following morning this fasting stomach is washed out with twelve ounces of normal saline solution, and the syphonage tested for albumen with Esbach's fluid. If a flaky precipitate and opalescence supervene, the test for albumen is positive, and the presence of cancer definite. In a very large experience Kuttner has never known this test to be positive except in the presence of cancer. In many cases, however, this test does not become positive until late in the disease, when it must be classed with many other positive signs which are too late in appearing to be of any practical value. The test, however, should never be omitted, because it frequently happens that it is positive at an early stage in the disease, and consequently becomes of inestimable value to the patient.

Aside from the albumen test, there is no symptom which may be absolutely relied on as pathognomonic of cancer of the stomach, and as this so frequently does not give a positive reaction until late in the disease, it may be said in truth that the diagnosis must always be made on general symptoms, such as cardiac or pyloric obstruction, adhesions of the stomach to neighbouring organs, gastric stasis, etc., and these in turn are frequently so insidious in origin as to arouse no suspicion until the time has passed when effective removal can be carried out.

Differential Diagnosis: Of the surgical diseases likely to be mistaken for cancer of the stomach, gall-stones with their accompanying complications, such as duct obstruction, infections, adhesions, or pancreatitis, are the most prominent; while large saddle ulcers, hour-glass contraction, or even pyloric obstruction due to ulcer cicatrization, are more easily differentiated. Duodenal ulcer, because of its typical, clear-cut symptoms, is not likely to be confounded with cancer.

Gall-bladder disease, with its various complications, is the source of the greatest difficulty in differentiation. In the late stages of disease due to gall-stones, the stomach symptoms are so truly characteristic of malignancy as to thwart even the most expert in arriving at an accurate diagnosis. The early history of the case in these instances must invariably be relied on in solving the difficulty. If the early history reveals the presence of sudden, severe attacks of epigastric pain, radiating under the right shoulder blade, such attacks ceasing as suddenly as the onset, and being in no way related to the partaking of food, the present trouble will usually be found in the gall-bladder. The early history must invariably be relied on to clear up the diagnosis, and will frequently be the means of preventing an otherwise excusable error.

In extensive saddle ulcers, or marked hour-glass contraction, the clinical picture is frequently one as though stamped with malignancy. There is often that emaciation and cachexia so significant of carcinoma. Hæmorrhages are sometimes frequent, and may even present the coffee-ground appearance so typically characteristic of cancer. In a condition such as this, we may even have a complete absence of hydrochloric acid and the presence of lactic acid with the Oppler-Boas bacillus, so frequently considered as positively significant of cancer.

In differentiating between such extensive ulceration and true cancer, one must remember that in ulcer the appetite remains good until quite late in the disease, and the loss of flesh and strength is consequently slow. In cancer the appetite is lost early, and rapid emaciation supervenes. In cancer the pain is more diffuse, is more constant and depressing, and not so closely related to food. If a movable tumour of the stomach be discovered with the presence of lactic acid and the Oppler-Boas bacillus, and the absence of hydrochloric acid in a test meal, cancer may, with comparative safety, be diagnosed.

The following table indicates the differential diagnosis:

GALL-STONES	GASTRIC ULCER	DUODENAL ULCER
PAIN: The pain in gall-stones is sudden, sharp, severe, and intense. It commences in the right hypochondrium and radiates to the right shoulder blade. It appears without the slightest warning and disappears just as suddenly. These seizures have no relation whatever to the injestion of food, and are frequently accompanied by chills, fever, and sweats. Should a stone be occluding the common bile duct, periods of jaundice of longer or shorter duration will frequently follow the attack of pain.	Is present in most cases, but is much less excruciating than in gall-stones. It radiates from the epigastric region to the left shoulder blade. It is increased by the injestion of food. The location of the ulcer may be partially determined by the period elapsing between the injestion of food and the commencement of the pain. If along the lesser curvature, pain appears in from one-half to one hour. If in the pre-pyloric region in from one to three hours.	The pain of duodenal ulcer appears in cycles ranging in time from a few days to several months. It is of a burning, gnawing character, and may be described as a "hunger pain," always appearing from two to four hours after meals, when the stomach is becoming empty. It is invariably relieved by food. An ulcer in the immediate pre-pyloric region will exhibit the same symptoms as one just beyond the pylorus.
VOMITING: Frequently accompanies the intense pain, and usually gives relief. Is of a greenish colour and intensely bitter.	Is usually a prominent symptom. Occurs from one to four hours after a meal, according to the location of the lesion. These vomiting spells are usually accompanied or followed by distressing eructations of gas.	Nausea and sour eructations are prominent symptoms from the first, while vomiting in the later stages is always present. Commences as a rule from two to four hours after a meal, though in some cases will appear only once a day, or perhaps only every second or third day. Gas formation is typical of ulcer either just beyond the pylorus or in the immediate pre-pyloric vicinity. Is invariably relieved by food for a period of from two to four hours.

GALL-STONES	GASTRIC ULCER	DUODENAL ULCER
Hæmorrhage: Rare—and if present, is only accidental.	Probably 60 per cent. of all cases of gastric ulcer have hematemesis, which in the acute round variety is frequently fatal. Hematemesis is, strictly speaking, not a symptom, but rather a late complication.	Many cases of duodenal ulcer suffer from sudden, severe fainting spells, to be followed almost immediately by blood in the stool (melæna). In this condition the stools have a tarry appearance. Microscopically blood is much more frequently found in duodenal than in gastric ulcer.
Stomach Contents: Usually normal.	Usually an excess of hydrochloric acid. Blood may be frequently found microscopically.	As in gastric ulcer, hyperacidity is frequently marked. Blood is not usually present in stomach contents, but may be discovered in the fæces.
Tenderness: During or immediately after an attack, tenderness is frequently marked in the right hypochondrium. Muscular rigidity is also often present.	Is usually quite marked in the epigastrium. Is sometimes diffuse, though usually quite definitely localized.	If tenderness is present it will be found to the right of the median line. Is marked, however, only in the presence of localized peritonitis.

The treatment of cancer of the stomach is essentially surgical. True it is that many, anxious for surgical relief, must be refused because of the extensive proportions to which the disease has already advanced; there are also many patients who refuse operation. These two classes must be treated palliatively. To the other class, those whose diagnosis is made at a comparatively early period, while yet there is prospect of cure, and who are willing to undergo the risks of operation, surgery will, indeed, offer good prospects for a long lease of life. Surgery offers the only hope of cure, and the great problem before the medical profession to-day is to evolve some means of arriving at an early and accurate diagnosis, so that surgical intervention may more frequently be instituted at such an early period as to ensure the saving or prolonging of many useful lives. To the man who may thus evolve such a method of early and accurate diagnosis, the world will indeed owe one of its greatest debts of gratitude. To recapitulate:

1. Cancer of the stomach begins as a purely local affection. At first it is confined to the part in which it begins to grow.
2. If removed at an early period it can be cured.
3. Unless removed early, it can only end in death.
4. Cancer is often present without pain. In some cases pain appears only in the later stages of the disease.
5. Ulcer of the stomach predisposes to cancer. In a great majority of all cases of gastric carcinoma, the seed bed can be shown to be the indurated edges of an old peptic ulcer.
6. The best time to effectually attack the disease is in the precancerous state—the ulcer stage. Thus by prevention, rather than by cure, will the greatest triumphs in the treatment of this disease be attained.

CLINICAL AND PATHOLOGICAL NOTES UPON CERTAIN SUB-TROPICAL DISEASES

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THE following paper has been prepared, not in order to add to our general knowledge of diseases met with in sub-tropical climates, nor will an attempt be essayed to describe in detail any of the conditions peculiar to the more southern latitudes. It is hoped, however, that a brief review of certain of the more important diseases prevalent in the southern United States, but which, of necessity, are more or less unfamiliar to physicians practising in Canada, may be not without interest to the members of this society.

For the most part, the disease conditions present in Montreal are also active as cause of disability and death in the south; similarly the reverse is also true. Unfortunately the majority of infectious agents are only too potent to induce their specific pathological processes with but little respect for climate or altitude; advancing age, moreover, is accompanied by the same types of degeneration, as evidenced by the development of interstitial nephritis, arteriosclerosis, etc., no matter upon which parallel the life of the individual be passed.

The percentage incidence of different diseases does, however, vary to a greater or less degree in different latitudes. Such variations are influenced directly by factors such as heat and humidity, which are essential characteristics of those latitudes nearer the equator, and others which are more or less accidental and depend largely upon different modes of life. For practical purposes it is difficult to separate the direct and indirect influences. It is possible, however, to consider the effects of these factors: first, upon the human individual as affecting his power of resistance; and, secondly, upon the various agents which are directly responsible for the propagation of diseased conditions.

As is well known, most pathogenic microörganisms, whether bacteria or protozoä, thrive and retain their vitality best at a temperature approximating that of the human body, and inasmuch as the climate nearer the equator is characterized by a higher temperature than it is farther north, being, in the case of the Gulf states,

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but a few degrees below blood heat during the greater part of the year, the danger arising from the life of pathogenic organisms outside the body is increased, as a result chiefly of the contamination of food-stuffs, more especially green vegetables, milk, and water.

In general, it appears that the physical well-being of individuals dwelling in warm climates is but little influenced by the higher temperature, in so far as disease and shortness of life is concerned. There is, however, a condition of physical and mental lassitude developed which has resulted in inhabitants of tropical countries being, for the most part, less alert and energetic than the more northern peoples. On account of certain features of life in the tropics, individuals although exposed, for reasons given above, to greater danger of infection, are in many respects better able to protect themselves against the onset of many diseases. Directly and indirectly the protective powers of the body are influenced favourably by the following factors: the absence of intense cold and the balmy climate, which persists during the whole year, make life in the open air more pleasant; we find, therefore, that the people are out-of-door dwellers for the greater part of each day and are easily able to ventilate their houses and sleeping quarters. As a result, tuberculosis, even among the negroes, is neither so widespread nor so active as it is with us. The open-air life and the absence of hardship and exposure, such as is so common during our winter months, diminishes also the relative number of infections of the respiratory tract, such as tonsilitis, lobar pneumonia, etc., resulting from streptococcic and pneumococcic invasion.

In addition to the beneficial effects resulting from a sufficient supply of fresh air, and the absence of rigorous winter weather, the ease with which the poorer classes are enabled to obtain an abundant supply of food results in fewer cases of those diseases which attack the ill-nourished. The climate and the soil of Louisiana both render the practice of horticulture so easy that no one need be destitute. The use of rice and corn as staple articles of diet reduce to an important degree the cost of living among the poor.

As a direct result of the higher temperature, the secreting power of the kidneys is conserved, the skin performing a large part of the excretory function. The average age of onset of chronic cardio-renal disease of simple origin is thus greater than it is in our own climate. Although higher mean temperatures foster to an important degree the capacity of pathogenic microbes for harm, proper hygienic measures will result in a tremendous decrease in the number of cases of illness and death resulting from bacterial and protozoan infection. Inasmuch, also, as the activity of pathogenic microörganisms in the warmer climates is greater than in our more northern latitude, it is to be expected that such measures for the protection of public health will be initiated more thoroughly there than here. For years past, indeed, the danger resulting from the pollution of water has forced the southerner, in many places, to employ only rain water for drinking purposes. The success of such a procedure is nowhere better shown than in the comparative absence of typhoid fever in towns in which this method prevails. The filtration systems which have been installed, such as the one in New Orleans, have also proved eminently satisfactory in this respect.

Several facts of interest cannot fail to impress the student of medicine from the north, if he observe the relative frequency of certain diseases in the southern United States as compared with the north. As mentioned above, tuberculosis, despite the lax personal habits and ignorance of the negroes and the poorer whites, is much less prevalent than among ourselves; typhoid fever and bacillary dysentery also are encountered much less frequently than might well be expected, were it not that preventive measures are enforced more or less adequately.

In certain districts, too, and this is the case in New Orleans, malaria is a comparatively uncommon affection. This practical eradication of malaria in New Orleans occurred as a by-product, resulting from the campaign undertaken against the mosquito at the time of the yellow fever epidemic in 1905. At this time the anopheles, as well as the stegomeia, were largely exterminated, and, although both types of mosquitoes are again present in large numbers in the city, they have but little chance of becoming infected. Acute malaria is, therefore, comparatively infrequent in New Orleans. Chronic æstivo-autumnal cases are, however, not unusual, the patients being bitten, as a rule, in the country and coming into the city already infected.

It may not be without interest, in this connexion, to interpose a note relative to one characteristic of the stegomeia, which renders the control of yellow fever comparatively simple. This tiny mosquito will not cross an open space equal to the width of an ordinary thoroughfare unless carried upon some individual. The disease, therefore, can be readily controlled by isolating single blocks of houses and screening those individuals suspected of being diseased, so that the stegomeia cannot become infected. A careful attack upon the mosquitoes themselves and their breeding places soon causes the disappearance of the disease.

Of the diseases met with in Louisiana which are common to all climates and countries, syphilis is, probably, the one which is responsible for the greatest morbidity, not only among the negroes but also among the whites. It would appear that not only is syphilis more prevalent but that in southern countries it is a more virulent disease and shows less tendency to remain latent. I have notes of over eight hundred cases of syphilis seen during the last eighteen months in my laboratory at the Touro Infirmary, a large percentage of whom presented themselves on account of serious visceral and nervous lesions.

In addition to these and other widespread diseases large numbers of cases are seen suffering from such conditions as leprosy, pellagra, and various parasitic gastro-intestinal affections, notably amœbiasis, uncinariasis, and strongyloides infection, which are only rarely found in these latitudes. If one be fortunate, an occasional case of ainhum, elephantiasis, tropical ulcer, and yaws, may be found. I have had the opportunity of observing four typical cases of ainhum and one of yaws.

Uncinariasis: Owing to the climatic conditions, especially as regards temperature and humidity, being propitious for the retention of vitality and for the completion of the life cycle of the higher parasites, more especially the uncinaria and strongyloides, the exposure of the people to infection by these animals is present in all districts in which a most careful disposal of human excreta is not maintained. As is to be expected, conditions favourable to the dissemination of ova and larvæ are especially prevalent in the country districts and in the smaller towns.

At least 30 per cent. of those living in the country are infected with uncinaria, although by no means all individuals infected present symptoms which justify the use of the term, "hook worm disease." The Porto Rico Commission estimated 30 per cent. of the total death rate to be due to uncinaria infection. A certain moderate grade of anæmia, accompanied by œsinophilia, is, however, usually noted, together with an accompanying loss of physical and mental energy of greater or less degree. Individuals commonly commence to harbour the parasite in childhood, a history of "ground itch" during this period being usually elicited. There are, however, a considerable number of persons who appear to have been infected in adult life, in all probability by means of the digestive tract. Well marked cases of the disease present a condition of lack of development which may be sufficiently marked to merit the use of the term, infantilism. Under such circumstances, a patient of twenty, or even thirty, years of age, will be no further developed either physically or mentally than a child of ten or twelve. The most marked cases, in addition to presenting an appearance characteristic of mental lassitude, are bloated or puffed up as the result of œdema. An important fact, in view of its bearing upon public health measures, is the mild symptoms presented by negroes, even though they harbour enormous numbers of the parasites.

The demonstration and identification of the ova is the only means of establishing the diagnosis. In this connexion, the ingenious method of centrifugalization of fæcal material in a series of fluids of varying specific gravity, renders the discovery of the eggs very simple, and should always be employed before giving a negative report in any suspected case.*

The appreciation of the importance of uncinariasis to the southern peoples is due largely to the effects and observations of Stiles of the Public Health Service. At the present time the study of methods of prophylaxis and cure of the disease is attracting much attention, and with the help of the Rockefeller Commission there is every probability that in a few years the parasite will cease to be the scourge which it is at the present time.

STRONGYLOIDES: Strongyloides intestinalis infection, while similar in many respects to hookworm, differs from it in two important particulars. In the first place, it is more difficult to eradicate and, secondly, on account of the complicated life history of the parasite, rarely are many parasites present in the one host. The mother worm, which makes its habitat the upper jejunum or duodenum, buries itself deeply in the mucosa, so that it is only with great difficulty that it can be attacked or dislodged. Here are laid the eggs, which usually hatch while still in the alimentary canal into male or female daughter worms, or a nondescript type which on account of its striped appearance is known as the rhabdidiform larva. It is these microscopic larvæ which are usually present in the stools, the ova being only occasionally found. When present the eggs can be differentiated from the hook-worm ova only with the greatest difficulty.

Nature, in her kindly providence, has rendered it necessary for the intermediate sexual cycle of the strongyloides life history to take place outside the animal body, except in very rare instances, so that single infection is the rule. In one case reported by Gage, and observed by myself, the larvæ had gained access to the upper air passages and there passed through the sexual cycle of development with the result that large numbers of mother worms were found in the gut and also within the lung tissue.

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* Bass, *Archives of Int. Med.*, June, 1909.

Tricocephalus dispar, or whip worm, is a common inhabitant of the intestinal tract, being occasionally present in large numbers, and, although not recognized as a pathogen there seems to be evidence in favour of anæmia, with its usual concomitant symptoms, being induced by its presence.

AMŒBIASIS: The larger nematodes and the tæniæ, including the nana, are found in a slightly larger percentage of cases than in Montreal. The smaller forms of animalculæ, notably the amœbæ and ciliates are, however, present in a majority of individuals, and occasionally in astonishingly large numbers. Considerable debate exists even at the present time, as to the part played by the amœbæ in producing intero-colitis. A very extensive amount of work has been carried out ever since Councilman and Lafleur first published their observations, which established the pathogenic properties of at least certain forms of the organism. In all probability it will be proven that there is one true pathogenic amœba corresponding to Chaudinn's histolytica, but that indirectly several others predispose to a diseased condition of the intestine as a result of the mucosa being rendered more susceptible to the action of the normal, intestinal flora through their irritant action.

TRICHOMONADS: It is the author's opinion that under certain conditions the supposedly harmless trichomonads are the indirect cause of severe gastro-intestinal disturbance. This group of ciliates, although common in many latitudes, is particularly prevalent in the warmer climates; in fact, very few stools are examined which do not contain these parasites. Occasionally they seem to form the bulk of the defecated material, and in as much as not infrequently the patients harbouring such tremendous numbers suffer from a colitis which cannot be accounted for upon other grounds, it seems justifiable to assume that the trichomonad is directly or otherwise the cause of the condition, especially since the pathogenic properties of other parasites, such as the amœbæ and the balantidium coli, have only been more recently appreciated.

PELLAGRA: Until more recent years pellagra was looked upon as a rarity upon this continent. Of late, however, the number of recognized cases has increased to an alarming extent, some observers estimating the number of cases in the United States to be as high as fifty thousand. As a result of this rapid rise in the importance of the condition, much space has been devoted to it in the medical journals of the republic. In brief, pellagra is a disease characterized by various affections of the epithelium lined surfaces of the body and of the nervous system. Enteritis, cystitis, vaginitis, and stomatitis, are commonly present at some time during the course of the disease in addition to the characteristic dermatitis. With the exception of the skin manifestations no lesion presents any pathologic peculiarity characteristic of pellagra. The skin lesion which appears on the extremities, and somewhat less frequently upon the face and neck, begins as an erythema with, or without, bullæ formation. In general, the lesion is similar to a severe erythema solare, but is followed by a more intense pigmentation and epithelial proliferation or hyperkeratous. The histological appearance of the lesion is similar to that of *x*-ray dermatitis, and in view of this fact, as well as the clinical observation with reference to its development upon exposed parts of the body, there seems little doubt that the direct cause is sunlight, acting upon skin surfaces whose normal resistance to the sun's rays has been depressed. Intestrigo in the usual situations is commonly associated with other evidences of reduced epithelial resistance. The nervous manifestations consist of pain in the extremities, mental dulness, apathy, and not infrequently pronounced melancholia or mania.

At the present time no pathology of pellagra can be said to exist. There is no characteristic lesion, nor is the ætiological factor by any means determined. In so far as is known at present it would appear that, as the result of some factor whose nature is still problematic, there is induced a state of lessened resistance of the epithelial structures of the body, whereby they are rendered more susceptible to the action of irritants to which they are normally subjected. Lombroso, whose observations upon pellagra were very extensive and carefully carried out, believed that the ingestion of corn or other cereal improperly prepared accounted for the disease. At the present time, in the absence of any more plausible theory, probably the majority of writers on pellagra believe that it is caused by the presence in spoiled corn, or other similar food-stuff, of certain moulds which produce a toxin similar to ergot.

Recently more attention has been paid towards the possibility of the disease being parasitic in nature and communicated by insects. Sambon, whose statements have received widespread attention and comment, considers that on circumstantial evidence a gnat, (simulium reptans) can be proved to be the intermediate host for the causative agent. While very willing to accept any proof which may be offered of the parasitic nature of the disease, I can only believe that, in the light of the facts at present at our disposal, the theory of ingested toxins best explains the character of the affliction. Bass, of New Orleans, whose observations upon pellagra have been very comprehensive, has lately published a report upon pellagrous symptoms produced in the common fowl by means of feeding with corn infected by a microörganism isolated by him from the fæces of pellagrous patients and cultivated upon cornmeal agar.

The mortality percentage of the disease in the United States appears to be higher than in Italy. A considerable number of cases, however, if recognized sufficiently early, recover. The form of treatment which has proved most efficacious consists of a change of diet, removal to a cool climate, and protection from direct sunlight. The administration of arsenic seems valuable, and many cases improve under salvarsan or atoxyl injections. Cole, of Mobile, reports very good results following transfusion. Symptomatic treatment must, of course, be carried out for the relief of the individual manifestations, enteritis, cystitis, etc.

Leprosy: Leprosy is a disease the existence of which has been recognized for many centuries, and one which, as the result of tradition, more especially scriptural in origin, is looked upon by the majority of laymen, and to a not inconsiderable degree by members of the profession, with a sense of horror and fear which is well-nigh inhuman in its cruelty to the individual, but which is based largely upon ignorance. Remove the stigma of incurability from the affection, and leprosy becomes a disease of comparatively little importance when compared with tuberculosis, syphilis, typhoid fever, etc.

The bacillus lepræ shows a preference in its growth within the body for two tissues in particular; namely, the skin, including the mucosa of the upper air passages, and the nerves. Of the latter, the ulnar and the peroneal are those by far the most frequently affected. The lesion produced is essentially proliferative in type and characterized in all older lesions by the presence of large multinucleated cells which contain masses of bacilli known as globi. It is by the extension of proliferative processes within the nerve sheath that the nerves are at first irritated and ultimately destroyed. Following the comparatively short period of hypersensitiveness, pain, and other evidences of an active neuritis, to which Van Wart has drawn particular attention, there is a loss of function on the part of the nerve evidenced by analgesia, trophic disturbances, and paresis or paralysis of certain muscles. Main-en-griffe and foot-drop are common early symptoms of the disease.

As the result of the loss of trophic control, parts supplied by destroyed nerves atrophy, and fingers and toes, more particularly the fifth on both hand and foot, may become infected and require removal, or else undergo dry gangrenous change and amputate spontaneously. In all old neglected cases this atrophic condition results in the loss of all the fingers and less frequently of the toes.

The picture of the leper as usually described is that of an individual of leontine appearance with fingers and toes dropping off, and foul ulcerating surfaces covering his body; in brief, an object of disgust and loathsomeness. Leucodermic patches have also been considered characteristic of leprosy, although it is difficult to understand why this is the case, unless it be that in districts in which lepers are ejected from communities and have to shift for themselves, as best they may, the site of healed ulcers, which develop under circumstances of neglect, present such an appearance. Trophic ulcers undoubtedly do occur, but in individuals who are at all adequately cared for they are uncommon and heal comparatively readily. The lion-like face, resulting from the destruction of the nasal septum and the prominence of the soft tissue through tubercular infiltration, is met with only in cases of very long standing, in what might be called the terminal stage of the disease. As mentioned before, the loss of fingers and toes, and contractions, do take place. Such deformities are, however, by no means horrible. In a word, there is no just cause for the impression generally held of the appearance of the leper, unless cruelty of his fellow-men has aggravated his misery ten-fold by throwing him upon his own resources and then excluding him from any means of making a livelihood.

Nor is leprosy a disease which is easily communicated. Experimental as well as clinical observations indicate that it is only as the result of prolonged intimate contact and repeated inoculations with relatively large numbers of bacilli that the disease is engrafted. It is the author's belief that the naso-pharynx is probably the source of infection in the majority of instances.

The skin lesions are of several types, the two most common being the macular and tubercular. The macular lesion consists of a slightly raised, somewhat firm, irregular area, similar in many respects to erysipelas, but of a more coppery colour. The typical tubercular lesion is a raised, very hard, dry nodule, usually brownish in colour and resembling the fibrous masses of von Recklinghausen's disease. It is as the result of confluence of tubercles upon the face and in the lobes of the ears that the leontine facies develops.

In the early months of the leprous infection, a curious lesion known as a neuro-lepride is seen, which is of the nature of an angio-neurotic œdema and resembles very closely simple urticaria. This lesion is transient and may appear each day in a different part of the body; the arms and face, however, being the most often affected. None of the cutaneous lesions show any marked tendency to ulcerate as there almost invariably persists a layer of uninfiltrated connective tissue immediately beneath the epithelium. In the naso-pharynx, however, as the result of maceration of the mucosa, ulceration is common, and it is from these lesions that the danger of infection to others comes.

The course of leprosy is, as is well known, extremely slow; in fact under proper care the leper will probably live almost as long as the majority of his more fortunate neighbours. But if the bacillus is slow to destroy the individual, the human organism is equally slow to eliminate the invader, for although individual lesions may disappear spontaneously, as the result of *x*-ray or other treatment, it is the rule for them to reappear elsewhere. Many measures have been employed, such as arsenic, chalmogra oil, hot baths, forced feeding, etc., but without much success, although there seems to be no doubt that a small percentage of cases recovers under simple constitutional treatment. It is my belief that many of the cases classified as pure anæsthetic or nervous types are cured of leprosy, at least in so far as active disease is concerned.

During the winter of 1909, Dr. C. W. Duval was successful in corroborating Clegg's work upon the leprosy bacillus and in obtaining pure cultures by means of an ingenious method for the liberation of tryptophane. The first isolations are slow growing, but after a few months' growth are relatively rapid, so that sufficient material for experimental purposes is readily obtained. Following the cultivation of the bacillus, Dr. Duval and myself, assisted by Dr. Ralph Hopkins, at once commenced experiments, both upon animals and human beings, which have led, we believe, to a method of treatment of leprosy which not only is successful in apparently eradicating the disease, but which is comparatively rapid in its results. Time does not permit my describing, in detail, the methods employed; suffice it to state, that it is possible by means of inoculations, either of suspension of the bacilli or, better, of the protein content, as represented by the chloroform insoluble portion of the bacillus, to induce acute inflammatory changes in the leprous lesion, which are sufficient in many instances at least to destroy the bacilli.

From our experiments we are convinced that the ordinary immune bodies are of little importance in controlling the viability of the leprosy bacillus, but that a condition of allergy must be induced in order to stimulate the polymorphonuclear cells to active phagocytosis, for in this way alone does it seem possible to influence favourably the disease. Doses of either bacilli or protein, which are insufficient to induce a hypersensitive state, appear to affect in no way the course of the infection.

Many cases were treated by employing small doses for many months without the slightest effect. If, however, a sufficient amount of material be inoculated, the following phenomena are noted: within twenty-four hours there is a swelling accompanied by redness, pain, etc., at the site of the inoculation, which may ultimately suppurate. The patient complains at this time of more or less headache and malaise, which is accompanied by a rise in temperature of from one to four or six degrees. The individual lesions also undergo an acute change, gradually increasing in size and becoming red. At the end of two or three days softening will take place. If incised, a considerable amount of purulent material is discharged, composed chiefly of polymorphonuclear leucocytes, which upon microscopic examination are seen to have been phagocytized. Whether incised or not, resolution ensues, with the result that at the end of three or four weeks, not only is there no evidence of an acute inflammation but the original leproma has also disappeared. As a rule the older lesions, that is, those containing the largest number of bacilli, react in this manner first, the remainder being affected only when larger doses are employed. Coincident with the local and constitutional disturbance, there is a leucocytosis ranging from 12,000 to 20,000, the increase being due to a larger number of polymorphonuclear leucocytes. By means of repeated increasing doses of the bacillary suspension, all the lesions may be induced to react in this manner till no evidence of the infection remains.

The phenomena described are analagous to those which occur normally during the course of the disease, and are designated lepra fever. It has long been recognized that it is customary for the patient to improve rapidly following such attacks, but rarely if ever does a complete cure result. By means of bacterial inoculations we are now in a position to induce at will these acute exacerbations, which have been shown to be conservative in effect. We are enabled to control the severity of the attacks, and thus to guard against possible untoward results.

SOME PHYSIOLOGICAL ASPECTS OF REFERRED PAIN

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PAIN has been defined as a variety of sensation whose existence we desire to terminate; it is a variety of sensation in that it requires the same physiological conditions as does sensation; namely, a nerve and nerve-centre and the presence of consciousness.

Thus, in leprosy, where the nerves are degenerated, there is no pain in the parts affected, and in paraplegia from complete transection of the spinal cord, there is no pain in the legs. When the nerve-centre is itself narcotized, pain is abolished; in the former cases analgesia is due to a peripheral, in the latter to a central, cause. There are, then, both physical and mental factors in pain. "Christian Science" has lost the sense of the proportion between these and magnifies the latter to the exclusion of the former.

We might classify the varieties of pain as follows:—(1) Pains from an over-stimulated sense-organ as, for instance, from too bright a light, a rasping sound or discordant intervals, excessive heat or cold, muscular cramp. (2) Pains from injury, mechanical or otherwise, to an exposed or naked nerve fibre; as from a thorn or a corn in the skin, a foreign body in the tooth-pulp, pressure of pus in a boil or abscess, or of blood within rigid capsules, the freezing of a nerve; and all cases of injury to nerves, such as transfixing or crushing them. Thus, Romberg's saying that "pain is the prayer of a nerve for blood" is not universally true, for a nerve may be painful from being engorged with blood. (3) Pure pains or pains of viscera and of such organs as are not provided with nerves of touch proper, besides the viscera themselves, the blood-vessels, the meninges, the periosteum, and the nerves themselves. (4) Pains called "referred" and sometimes "sympathetic" and "reflex." (5) Hallucinatory pains of "the absent member."

The viscera, in which we may include the heart, the blood-vessels, and nerves, are apparently so badly supplied with nerves

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of touch, that we are normally unaware of their presence and cannot, therefore, localize them except in the vaguest manner. Though we must believe that afferent currents are at all times ascending from the viscera, they do not in a state of health obtrude themselves on our consciousness. This is well exemplified in the case of the lungs from which it has been definitely proved afferent currents are continually ascending by the vagi to the respiratory centre, although these currents certainly do not enter into consciousness. Similarly, the iris, the pleura, the heart, the liver, and gall-bladder, the reproductive viscera, the periosteum, and the meninges, provided they are perfectly normal, are entirely outside the mental realm. The last mentioned tissues—the spinal meninges—are interesting in this connexion, seeing that the existence of recurrent sensibility as an exception to the Bell-Magendie Law is to be explained by the presence of fibres afferent from the coverings of the spinal cord. It will be remembered that it is their stimulation in the peripheral stump of the anterior root which gives rise to the pain occasionally experienced in experimental irritation to some of those roots. Surgeons tell us that the normal liver is insensitive to diagnostic puncture, and the cerebrum itself to operative procedure.

But this state of things is considerably altered when the viscera become abnormal—inflamed, congested, catarrhal, ulcerated, or distended. Here the pain may arise either from morbid mucosæ or from morbid muscles, for instance in cramp; or from both together. The pains of iritis, angina pectoris, aneurysm, pericarditis, pleurisy, bronchitis, gastritis, gastric and intestinal colic, the pain of colitis, of biliary and renal colic, in diseases of the bladder, testes, ovaries, and uterus, are therefore true visceral pains or cases of pure algesia. In certain forms of neuritis, for instance in sciatica, the congestion or tension in the perineural sheaths irritating the nervi nervorum must be the basis of the pain; the nervi nervorum are, therefore, purely algesic nerves. It is, of course, theoretically possible that there are no nerves of pure pain in the viscera, and that the nerves of common sensibility are stimulated only by such excessive irritations as become painful in consciousness, whereas the normal states of the tissues constitute only subliminal stimuli. Physiologists have, however, a good deal of reason to hold that there are nerves, other than visceral afferents, which are nerves of pure pain. In physiological language, then, the viscera and other autonomic structures (Langley) possess afferent fibres which in health are stimulated so slightly that localization is extremely vague or nonexistent, whereas in morbid conditions these fibres convey impulses which are decidedly painful, although they may not lead to any more definite localization.

It is these visceral pains that have a great tendency to be referred into the skin. In order to understand how this can take place, we must have before us the physiological anatomy of a spinal cord segment and its connexion with the autonomic system.

The visceral (autonomic) afferent neurone, leaving some peripheral tissue, passes through one of the prevertebral ganglia and enters the vertebral chain of the sympathetic system. In this it travels headward and turns aside into a white ramus communicans, whence it enters the spinal nerve immediately after its formation and thence turns back into the posterior root of that nerve. In the ganglion of this root it has its trophic cell after the manner of the much better known afferent somatic fibres. Passing central of the ganglion, it enters the dorso-lateral region of the white matter of the cord in which it bifurcates, an ascending limb travelling, presumably, towards some cerebral region, the descending limb entering the grey matter of the posterior horn in which it and its collaterals may terminate synaptically.

Now it is clear that the afferent neurone from the skin (sensory cutaneous fibre) and the afferent neurone from the viscus have a common path of entry into the cord from the posterior root inwards; the theory of referred pain (tenderness or sensation) is that somewhere in this common path the excitement of the splanchnic afferents is transferred to the somatic afferents, and that, the cerebral centre for these being stimulated, the mind suffers an illusion and refers the source of the irritation out to an area of skin. Psychologically, this is an algesic illusion due to peripheral reference. All viscera whose afferent fibres enter white rami communicantes, or their homologues, may therefore have skin-areas to correspond with them; or, put otherwise, in all such spinal segments whose nerves receive white rami communicantes, there is the possibility of the transference of nerve-impulses from visceral to somatic afferent neurones.

As far as we know, visceral irritation does not give rise to referred pain in muscles, although the afferent fibres from muscles also enter by the posterior roots. As far as we know, cutaneous irritation does not give rise to referred pain in viscera; so that it has been said, the skin is sympathetic with the viscera, but not the viscera with the skin. The most likely place of the transference is in the grey matter of the spinal cord, for here the naked collaterals of the autonomic and the somatic afferent fibres are in close contiguity; it is a much more probable place than is the posterior root in which both fibres are still medullated. The seat of transference of irritation (nerve-impulses) is, therefore, more probably in cord segment than in posterior root; we shall later see that this view is pretty fully corroborated.

We might now look a little more in detail at some of the evidence which Professor Langley has brought forward to indicate the existence and the precise path of entry of the afferent fibres of the autonomic system. In the first place, they do not enter the cord by the anterior roots because stimulation of the central end of the cut anterior root gives rise to no reflex actions (Bell-Magendie Law). They do not enter by the grey rami communicantes, because stimulation of the central end of a cut grey ramus calls forth no reflex actions. From other data we know that the grey rami contain only efferent fibres (the somatic vaso-motors).

We have, therefore, only left as paths of entry the white rami and the posterior roots. First of all, stimulation of the central end of a cut, white ramus does give rise to reflex action, proving that the white ramus contains afferent fibres. This is confirmed by the following observation: a section of the spinal nerve inside the vertebral canal but, of course, peripheral of the posterior ganglion, causes all the medullated fibres of the white ramus to degenerate, therefore, all the afferent fibres in the white ramus must have their trophic cells central of this spot, and as there are no afferent fibres in the anterior roots, the trophic cells must be found in the posterior ganglion. Conversely, if the splanchnic nerves are cut or the sympathetic chain itself, no degenerated fibres are found in any of the white rami, showing that the cells trophic for these fibres are situated somewhere proximal of the place of entrance of these fibres into the nerve-roots.

But further, if one considers the path of entry of the afferent fibres from the skin, it will be obvious that these must have their trophic cells in the posterior root ganglia, for the cutaneous sensory fibres have no peripheral ganglia to pass through en route for the spinal cord.

The same lines of reasoning apply to those structures homologous with the white rami; namely, the origins of the pelvic splanchnics or sacral autonomic fibres. If the posterior roots of the second, third, and fourth sacral nerves be cut outside the ganglia, one-third of all the fibres in the pelvic splanchnics are found to be degenerated, proving such fibres to be afferent. Once again, when the English worker, Warrington, cut both roots of the first thoracic nerve (the posterior between the cord and the ganglion), and found that one hundred and thirty-six fibres in the white ramus did *not* degenerate, he demonstrated that these still normal fibres entered by the posterior root, in which they had trophic cells, for it had been previously shown that not all the fibres in the white rami are efferent, and that no fibres of white rami enter the cord by the anterior roots. Only those skin-areas with afferent neurones which enter the grey matter of the cord along with visceral fibres through white rami or such homologues as the pelvic splanchnics, can have referred pain by transference of nerve-energy in their own cord-segments. Thus, the segments receiving fibres from that part of the sympathetic system known as the dorsal outflow (from second dorsal to second lumbar nerves, inclusive) can be the seat of such direct transference as leads to referred pain, as well as segments corresponding to the second, third, and fourth sacral nerves which are similarly related to the sacral autonomic outflow.

Since, then, the fifth to the eighth cervical nerves and the first dorsal nerve have no white rami communicantes, the segments to which they are related are not the seats of the transference necessary to evoke referred pain, and hence the related skin-areas are exempt from it and constitute what Dr. Head has called "the brachial gap." Although, indeed, the first to the fourth cervical nerves have no white rami, yet since the segments of their origin are accessible to the transference of nerve-impulses from irritation in the medulla, the skin innervated by these nerves is liable to referred pain, which we might describe as due to medullary irradiation. According to Dr. Head there is also a lumbar gap related to the third and fourth lumbar segments.

We might now take some definite examples of referred pain well known to medical diagnosticians. The referred pains of dyspepsia, gastric ulcer, and hepatic disease are experienced in the cutaneous distributions of the anterior and posterior branches of the fourth and fifth dorsal nerves, because, as Dr. James Ross pointed out in *Brain*, as long ago as 1887, the afferent splanchnic fibres from the stomach and liver enter into the fourth and fifth dorsal segments. In lesions of the small intestine, the pain is referred chiefly to the anterior division of the ninth, tenth, and eleventh dorsal nerves, that is around the umbilicus. In diseases of the kidney and ureter the pain is in the skin-areas related to the tenth and twelfth dorsal and the first and second lumbar segments, and therefore related to the distribution of the ileo-inguinal and genito-crural nerves. Morbid states of the ovaries cause referred pain in the areas of distribution of the posterior branches of the second lumbar nerves and of the anterior and lateral branches of the first, second, and third lumbar nerves.

Similarly, pain referred from the testicle involves the first lumbar segment, that is, the ileo-inguinal nerve. Pains from lesions of the bladder and prostate in the male are experienced in skin-areas related to the third and fourth sacral segment, and as these receive the pudic nerve, the reference is to the tip of the penis. The rectum causes pain to be referred to the distribution of the second and third sacral segments, that is, to the areas innervated by the small sciatic nerve. The uterus gives pain referred to the nerves at the back of the sacrum from the involvement of the second, third, and fourth sacral segments.

We must, therefore, believe, in cases of referred pain, that there is somewhere in the grey matter of the cord or medulla an actual transference of neurine from a deep afferent fibre to a superficial one. If this neurine were to be transferred from the terminations of the autonomic afferent fibre to the cells of origin of any efferent neurone, we should have reflex action instead of referred pain. But, as a matter of fact, it is possible to have both simultaneously, as in cases of severe referred pain over certain intercostal spaces being associated with actual spasm of the underlying intercostal muscles. The presence of true reflex action along with the severe referred pain of hemicrania is well illustrated by the following case which lately came under my notice. A patient had severe, periodic, hemicranial headache, associated with vaso-constriction on the same side of the head, secretion from the nasal glands, spasm of the sterno-mastoid, and vomiting. The interpretation of this complex of symptoms is probably as follows: the irritation due to the gastric catarrh and toxæmia violently stimulated certain terminals of the afferent gastric branches of the vagus, which conveyed nerve-impulses towards the sensory centres of the ninth and tenth nerves in the medulla oblongata. Here there was transference of irritation to certain terminations of afferent neurones of the ophthalmic division of the fifth nerve, giving the severe post-orbital headache, but there was also irradiation of impulses to the following centres—vaso-motor, vomiting, for the spinal accessory nerve, and for the glands of Bowman, producing, respectively, vaso-constriction of the vessels on the side of the face, vomiting, spasm of the sterno-mastoid, and the artificial coryza.

There must have been, in this case, a very wide irradiation of impulses from the sensory centre of the vagus to neighbouring centres of the medulla oblongata; in this way we can understand how it is that very great pain can produce shock, if by "shock" we understand what some assert it to be, over-stimulation of the vaso-motor centre resulting in general vaso-motor constriction. (On the view of others it is rather a reflex inhibition of the vaso-motor centre.) The irritation produced by lesions in some structures, small in themselves, is very liable to be referred to areas of skin of considerable size, that is to *irradiate*. Thus, in dental caries, the transference is from some of the inferior maxillary neurones to others of the same branch of the fifth nerve, giving the face-ache so characteristic of tooth-ache. But, of course, the transference may be to another branch of the tri-facial nerve, as in a case I noticed lately, in which unilateral nasal turgescence produced considerable pain in the normal maxillary antrum of the same side, that is, the transference was from neurones of the ophthalmic branch to the superior maxillary branch of the fifth nerve.

As every one knows, a large number of headaches are pains referred from regions other than cephalic. The headache of gastric and hepatic catarrh is probably a referred pain, resulting from severe vagal irritation, the transference being from the medullary terminations of the vagus to certain afferent neurones of the trifacial. That the vagus is in this case the afferent path from the stomach to the central nervous system, is rendered the more probable by some recent work of Professor Brodie and Dr. Miller of Toronto, who have shown that, as regards the reflex action of vomiting, the vagus is the only afferent path from the stomach.

But cephalgia is not the only pain referred from the stomach: in gastric colic the pain is most distinctly felt over the chest—"breast-bone pain"—which is held to be explained by the fact that the visceral afferents from the stomach enter the spinal cord by the fourth and fifth dorsal segments, the same whereby somatic afferents from the sternal skin also enter it. Now the view that gastric colic rather than gastric catarrh should affect the afferent fibres from the stomach, is quite in accordance with the conclusions come to by Dr. Hertz, of London, who has made a special study of visceral sensation and pain (*Lancet*, April 29th, 1911). Dr. Hertz believes that fibres afferent from the muscular coats of the viscera are the fibres whose stimulation is the basis of visceral pain; distension and dysperistalsis, rather than any conditions of the mucosæ, being the *adequate* stimuli for hollow viscera. He quotes Professor Langley to the effect that most of the afferent sympathetic fibres of the intestine arise in the muscular coat; thus it is evident why afferent impulses from the visceral muscle in spasm traverse the abdominal autonomic system and so affect segments concerned in "the dorsal outflow," whereas any irritation ascending by the vagus, and presumably from the mucosæ, is referred to cephalic skin-areas. The double, afferent, autonomic supply thus explains why such an organ as the stomach can give rise to referred pain in such widely separated parts as the head and the mid-region of thoracic skin.

A similar problem presents itself in the case of the heart which has a double innervation at least on the efferent side, namely, through the vagi and the cardio-accelerators of the sympathetic system. The afferent innervation is not nearly so well known: the depressor nerve of Ludwig and Cyon, afferent fibres reaching the nucleus of the vagus, is one path, but whether there are any afferent fibres entering by the "dorsal outflow" is still a matter of doubt. Their existence must, however, be postulated, because of the frequency of pain in the left arm in left cardio-valvular disease. Here the pain is referred to the cutaneous distribution of the intercosto-humeral branch of the second intercostal nerve, a branch of the second dorsal. Now we know that the cardiac dorsal outflow on the efferent side is through the second and third dorsal nerves, and presumably the cardiac inflow is by the same nerves.

Some writers have virtually suggested that the afferent impulses in cardiac irritation are ascending the efferent sympathetic neurones (cardio-accelerators); but this is physiologically improbable, since it involves the supposition that anti-dromic influences could not only ascend these efferent neurones but also pass over their cells of origin in the medulla (cardio-accelerator centre), and thus break the law of "valve-action" at a synapsis.

We might now ask ourselves, Is there any evidence to point to the kind of fibre, physiologically considered, which is concerned in the reference of pain to the skin? From the skin there are at least two kinds functionally. (1) Those subserving the sense of touch, the "epicritic" of Head. (2) Those concerned in painful sensations, and in those of heat and cold, the "protopathic" of Head.

That the paths from skin into the central nervous system for touch, on the one hand, and for pain and heat and cold, on the other, are different, is pretty well established: when pain is absent the thermæsthetic sensations are also, and vice versa. But touch may be retained when the other two sets of sensation are abolished, and vice versa.

Now we have a good deal of evidence to the effect that the peripheral distribution of tactile fibres is not the same as that of pain and heat and cold fibres. Professor Sherrington showed that the section of one posterior root did not abolish touch in any one given cutaneous area; in order to produce complete anæsthesia there one must cut through several adjacent posterior roots. The impossibility of producing anæsthesia by the section of only one root is due to the fact of "overlapping innervation." The tactile innervation of any given skin-area is, then, from more than one segment of the cord; and, as might be expected, the areas of tactile anæsthesia are irregular in outline.

Sharply contrasted with this is the state of matters of the protopathic fibres—the algesic and the thermæsthetic. When, in disease of contiguous spinal cord segments, there are present areas of painless skin, it is found that these analgesic zones do *not* overlap, and it is also known that the areas in herpes zoster do not overlap. According to researches of Dr. Head, the areas of referred tenderness or pain in visceral disease are characterized by their not overlapping. The area of loss of pain is always more definite and more extensive than that of the loss of touch. Dr. Head has also pointed out that the centre of an area of referred pain is not only hyperalgesic, that is, more sensitive to real local pain, but it is also hyperthermæsthetic, or more sensitive to heat; this Dr. Head calls "the maximum spot." Taking all the facts just mentioned into consideration, we seem to be able to affirm that referred pain is related peripherally to those fibres from the skin concerned in the sensation of pain and heat and cold; and that the central mechanism of the transference is in segments of the grey matter of the cord and neither in the posterior roots nor their ganglia. If any impulses related to referred pain actually reach the periphery, as some imagine they do, and are of an atrophic nature, they must certainly be antidromic in these algesic fibres.

HISTORY: Referred pain, as "sympathetic" pain, figures pretty conspicuously in the history of ideas regarding the functions of "the nerves of vegetative life," as the autonomic nerves were for so long called. The presence of ganglia on the abdominal sympathetic nerves was known to Galen. How the term "sympathetic" came to be applied to the nerves now so called, seems to have arisen somewhat in the following way: actions, which we now call voluntary were known to be carried out by the cerebro-spinal nerves, so that apparently those actions known as sympathetic were carried out by the ganglionated nerves. Sympathetic activities included those we know as reflex as well as cases of referred tenderness and pain.

Thus, if we take such a work as Bostock's "Elementary System of Physiology," (London, 1836), we find the following described as sympathetic: (1) True reflex actions; the examples given being vomiting from irritation of a biliary calculus and contraction of the diaphragm in sneezing. (2) Cases of referred pain, the examples given being headache from dyspepsia, and pain in the shoulder from liver disease. (3) Abnormal (hysterical) mental conditions, epidemic mental affections, induced by personal fascination or by imitation of fanatics or by "personal magnetism" (Adam Smith, Dougald Stewart, and Alison). Also such imitative states as epidemic dancing and the mutilating manias of the Middle Ages.

As regards referred sensation, the condition had been noticed nearly one hundred years before by that extraordinary observer, the Rev. Stephen Hales (1727).

The views held at the close of the eighteenth century as to the offices of sympathetic nerves and their ganglia, can be learned from Prochaska's work, "The Functions of the Nervous System." Prochaska adopted the view that ganglia on nerves impede or obstruct sensory impressions ascending the nerves. This seemed reasonable from the apparent fact that we have no sensations from certain internal organs whose nerves have ganglia on their course. The converse of this, that the mind could not affect the viscera, because their efferent nerves passed through ganglia, seems to have originated with Tissot (1728-1797). Prochaska wrote, "The mind has no immediate control over the heart, stomach, and intestines, because the impressions made by the will on the origins of the nerves do not appear to be able to pass through the ganglia of the great sympathetic nerve.'' This false doctrine of the blocking of impulses by ganglia was held to apply to ganglia on cerebro-spinal as well as those on autonomic nerves, which explains Prochaska writing as he did thus: "He who shall unravel the uses of the ganglia will also give a reason why the fifth pair of cerebral nerves pass through the semi-lunar ganglion . . . . and why only the posterior roots of the spinal nerves enter the ganglia, whilst the anterior roots pass by without any communication with them." This was exactly what Magendie had explained by 1822. So competent a student of the nervous system as Reil, in the year 1811, the year of the publication of Bell's first pamphlet on the functions of the two roots, stated his belief in the blocking doctrine. By 1822 Magendie had demonstrated with great experimental fulness the law of the two roots, that the anterior was efferent only, and the posterior afferent only. Bell had already made it clear that the Gasserian ganglion was the analogue of the posterior spinal ganglia, and that neither the one nor the others interfered with impulses going into the brain or spinal cord. But the ganglia, especially the sympathetic, had been for long credited with a positive function, namely, that of being the set of reflex actions. Although, of course, the term "reflex" was not in all cases used, Vieussens, Hermann Boerhaave, Vater, Meckel, and Gasser all believed that nerve-impulses (though they did not employ that term) were turned back towards the periphery at the nerve-plexuses and ganglia.

Prochaska puts it clearly thus: "Further, it may be asked whether the external impressions made on the terminations of the nerves and passed onwards to the ganglia are extinguished in the ganglia themselves, or whether being reflected there by a fixed law they return again along the nerves to the parts to be moved." Long after sympathetic ganglia were shown to be composed of nerve-cells, the possibility of their being reflex actions was believed in, but Professor Langley, who has gone into this question with considerable care, has come to the conclusion that there is no unequivocal example of a reflex action being carried out through the intermediation of any peripheral ganglia, with the possible exception of the enteric ganglia.

Both the original surmises as regards the ganglia have been shown to be incorrect, they neither block afferent impulses nor do they mediate reflex actions; the prophecies concerning their functions have proved peculiarly unfortunate. Some guesses in science have been subsequently proved right, those as to the sympathetic system and ganglia generally have not been of this order.

"Is there any regulation permitting a medical inspector or nurse to send home a boy who has a hole in one of his teeth, with instructions to stay away until the tooth is filled?" asked Trustee Hodgson. "I'll promise that an investigation will be made," said Trustee Lewis, and that was satisfactory.—Toronto *Telegram*, March 7th, 1912.

THE INTRAPERITONEAL ROUTE IN OPERATIONS ON THE URETERS

By Robert E. McKechnie, M.D., Vancouver

THE peritoneal cavity, until within comparatively recent years, was a region to be avoided by the surgeon, but, thanks to the evolution of surgery, to-day it can be invaded almost with impunity. The bile tracts, whether sterile or septic, the stomach, the intestines, which are virulently septic, the Fallopian tubes, often loaded with pus, all are attacked with confidence. But the ureters, although their contents are generally sterile, are severely let alone, and but little reason can be given to explain satisfactorily the avoidance of the trans-peritoneal route in operating on them.

Thus Keen, in his "Surgery," advises a long lumbar incision in rupture of the ureter. "For stone in the ureter in the upper part, operate through the ordinary kidney incision." "For all other stones, except in the very lowest segments, the retro-peritoneal operation is to be selected." "In a number of cases it may be necessary to make an exploratory laparotomy to locate the stone." "For purposes of repair, removing stones, or excision, the ureter can be exposed by either the retro-peritoneal or trans-peritoneal route. The latter procedure is rarely justifiable." "The trans-peritoneal route is at present indicated only in lesions of the lower segment, for repair operation, and for digital exploration."

Cheyne and Burghard in their article on "Ureterectomy," say: "In order to remove the ureter completely, down to its insertion into the bladder, several methods are employed. The peritoneal route has been adopted by some, the abdomen being opened while the patient is in the Trendelenburg position, and the peritoneum being divided over the ureter, and the latter removed. While this may be a possible route in cases of ureterotomy for stone, it is not advisable for the excision of a tuberculous ureter," and the lumbo-ilio-inguinal incision is recommended. For the removal of the terminal portion, they prefer the sacral route, much as for Kraske's operation on the rectum. They also say that in impacted stone, "the calculus must be removed without delay, if possible by an extra-peritoneal operation." "In very doubtful cases a median

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exploratory laparotomy may have to be performed in order to ascertain the condition of both ureters throughout their whole length; if this be done, the laparotomy wound should, if possible, be closed, and an extra-peritoneal operation performed for the removal of the stone from the ureter."

In Burghard's "System," we find: "The ureter may be exposed either by a trans-peritoneal or by an extra-peritoneal operation—but the former is now only employed when the surgeon is uncertain as to the situation and nature of the obstruction, etc." "There are many objections to the trans-peritoneal method. Unless the ureters be considerably altered by disease they are difficult to find behind the abdominal viscera; the peritoneum is opened both behind and in front, and in the event of any leakage of urine from the ureter, may become infected. The position of the wound does not permit of free drainage, etc."

R. Lawford Knaggs, surgeon to the Leeds General Infirmary, and professor of surgery in the University of Leeds, in the *British Medical Journal*, May 21st, 1910, in a paper on "The Sacral Route for Implantation of the Ureters into the Rectum," chooses a very difficult method, while the same object could have been attained with infinitely less trouble by the abdominal route.

In further confirmation of the attitude of the surgeons of the present day, Morris says, "Nothing should induce the surgeon ever to incise a ureter through the peritoneum unless he is absolutely sure of the aseptic nature of the urine." And Freyer says, "Considering the grave danger of urinary leakage, I hold that, even when the abdomen is opened for the purpose of effecting a diagnosis, if a stone is located in the ureter the abdomen should be closed and the calculus removed at a subsequent date, extra-peritoneally."

So that we find that the concensus of opinion is against the use of the trans-peritoneal route. But on what is the objection based? Either there are valid objections or else the incubus of tradition, existing from before the days of Listerism or the development of modern technique, is cowing the minds of the members of this most progressive science. I venture to affirm that the latter furnishes the explanation. Blind tradition still rules the realm of ureteral surgery. The various text-books give no reason for their dicta, merely a rule that the peritoneum should not be invaded. Some of the later writers mention the dangers of urinary leakage and of sepsis, but I think I can show that these dangers are not great; and apparently nothing else stands in the way of adopting more rational methods. By the abdominal route, and the use of inverted position, exploration is more perfect and more readily done, especially in the otherwise more inaccessible portions of the ureters, and operations can be more easily performed and the details more perfectly executed than could ever be hoped for by the retroperitoneal route. If modern technique can master the problem presented by operations on the bile tract, the bowels, or the tubes, surely it can be made to answer for the ureters, and a formidable and difficult operation rendered easy and safe. That it can be done, will be shown by the two cases I present. There is no need to apologize for wounding the ureter. Any one who does much pelvic work will sooner or later do so. However, these two cases are my only ureteral accidents in over two hundred hysterectomies.

The first case I shall narrate occurred in a woman of about forty. She gave a history of long-standing pelvic trouble, and on opening her I found the pelvis blocked by a large mass, including uterus, adnexæ, and a pelvic abscess, limited by dense adhesions. While removing the left ovary and tube, I stripped about two and a half inches of the left ureter bare, and expected trouble. However, I covered it with the remains of the broad ligament. The right broad ligament I closed by a continuous suture, and did not look for trouble from this side. I left supra-pubic drainage on account of the pus, and as it discharged freely the drain was still in on the tenth day. Up to this time, the urine had been normal in quantity, so that I thought I was safe. But on the tenth day the urine ceased coming from the bladder and discharged through the supra-pubic drain. The complete cessation of the urine by the urethra puzzled me. Only two conditions could explain it: either an opening in the bladder, or a simultaneous giving way of both ureters. This latter did not seem probable. I had half expected the left ureter to give way, but not both. A self-retaining catherer in the bladder discharged a little urine for a few days, and then it ceased. Eventually, I opened the abdomen and found that both ureters had given way, the left from necrosis due to imperfect blood supply, caused by stripping it bare, the right from a stricture caused by my continuous suture. A passage way for the urine led from the breach in the right ureter across the pelvis to the opening in the left, and thence to the abdominal wound. This sinus was completely walled off from the general peritoneal cavity, yet I have no doubt that for some time after the tenth day the pelvis must have been full of urine. As for adhesions, I was agreeably surprised to find but few, and these were very easily separated. To repair, I operated through the abdominal wound, the patient in the Trendelenburg position, and implanted the ends of both ureters, divided above the points of leakage, into the bladder, letting the remaining distal portions look after themselves. There was a good deal of tension, and my implantation must have been faulty, for following the operation, a great deal of urine welled up through the supra-pubic drain which I left in, so that the pelvis must again have been flooded with urine; but leaving a self-retaining catherer in the bladder, the supra-pubic discharge finally ceased, and a year after the operation I had the pleasure of receiving a letter from the patient saying that all was well and that she was enjoying better health than she had for years.

My second case was one in which I had performed a supra-cervical hysterectomy for fibroids, removing the adnexæ as well. The left ureter was not in its normal position, being found about the middle of the broad ligament, and I must have constricted it by my continuous suture, which closed the broad ligament. In a few days urine began escaping from the vagina, and was found coming from the stump of the cervix. I waited for several weeks before attempting repair, then made a median supra-pubic incision, and with the patient in the Trendelenburg position, effected an implantation into the bladder. In this case, owing to the site of the breach in the ureter being near the bladder, there was less tension on the sutures. In addition, I passed a linen thread up through the urethra and bladder, taking a bite in the end of the ureter, and tying the lower end of the thread around a piece of rubber tube placed across the orifice of the urethra. This aided in relieving tension on the sutures at the site of the implantation. I left a supra-pubic drain in for a few days, for fear of leakage, but none occurred, and the patient made an uninterrupted recovery.

I also am pleased to be able to quote some recent experiences in this work which fortify me in my argument. E. Deanesly, F.R.C.S., Wolverhampton, in the *British Medical Journal*, p. 1041, 1911, says: "In spite of the obvious advantages of the extra-peritoneal route in operating on the ureter with, possibly, septic contents, there are some important drawbacks, and the question of adopting the intra-peritoneal route, which has been recently advocated by Mr. Sinclair White, deserves serious consideration. The objection to the extra-peritoneal route lies not so much in the depth of the wound and the relative inaccessibility of the ureter, when approached from the outer side, as in the great length of the incision through the abdominal muscles and the transversalis facia. However carefully these are sutured, there is invariably a large and troublesome ventral hernia, which may seriously incapacitate for work. On the other hand, a median abdominal section, however long, if properly sutured and not drained, may be guaranteed against hernia. In addition to this very important advantage, it is possible, through an ordinary median hypo-gastric incision, to palpate the whole course of both ureters, and by placing the patient in the inverted position, to inspect and operate on either ureter from a little below the kidney to the entrance into the bladder. By operating with the same precautions as one would adopt with the opening of the gall duct or intestine, there is no more risk of peritoneal sepsis, and if drainage is required, as is usually the case, it can easily be made entirely extra-peritoneal by closing the posterior peritoneal incision and bringing out the drain through a posterior or lateral incision, not entering the peritoneal cavity."

Sinclair White, senior honorary surgeon to the Royal Infirmary, and lecturer on surgery in the University of Sheffield, in the *British Medical Journal*, January 1st, 1910, has an exhaustive article on ureteral calculi. He says: "The *x*-rays have demonstrated that, contrary to the belief formerly held, calculi are found in the ureters more frequently than in the kidneys. Leonard, from a careful analysis of a series of cases, estimated the ratio as being two ureteral to one renal stone." White narrates two successful cases of his own, operated on by the trans-peritoneal method, and combats the adverse criticism he received from Morris and Freyer. In his argument he says that he can find but one death among those cases reported as having been operated on trans-peritoneally. He states the possible objections as resolving themselves into two: (1) fear of infecting the peritoneum; and (2) danger of urinary leakage subsequently. He refers to the success of Wertheim's operation for implantation of the ureters into the bladder, in advanced cancer, by the abdominal route, and points out that the ureter can be sutured almost as easily as the bowel, with infinitely less likelihood of it reopening from tension on the sutures. He thinks that nowhere could a better instance be found of surgical tradition standing in the way of progress. He points out the rational methods of meeting the various indications, as one would do in dealing with other intra-abdominal conditions,—temporary ligatures on the ureters to control flow, aspirating the ureter when distended as in pyo nephrosis or hydro nephrosis, and a careful technic to avoid soiling. The advantages of the trans-peritoneal route he sums up as: "It, and it alone, enables us to clear up doubtful diagnoses. It is a less difficult operation than any of the extra-peritoneal procedures. It ensures plenty of room and an abundance of light, and the operator is able to carry out the steps it entails with little or no disturbance of the surrounding parts, and with an amount of precision quite unattainable by any other method."

W. J. Mayo, in the *Journal of Surgery, Gynæcology and Obstetrics*, June, 1911, gives a case of supra-pubic trans-cystic removal of calculi impacted in the vesical portion of the ureter. So he, too, is not allowing himself to be hindered by tradition.

It is known to you all, that surgeons are now boldly operating on the bladder, prolonging the opening upwards, and incising the peritoneal portion of the bladder to give additional room when needed. Modern technique makes this procedure safe. It is often expedient to attack a vesico-vaginal fistula, situated high up, by this method. The added risk is slight and the advantages great. The old fear of the danger from urine escaping into the peritoneal cavity during an operation, is not warranted by modern experience, but was based on the catastrophies of pre-aseptic days. In my first case, the lodgement of a pelvisful of urine did no damage, and the few frail adhesions found, showed the slightly irritating effects of the urine on the peritoneum, granting that all these adhesions were due to the urine and none to the mechanical irritations of the operation, from gauze packing, and manipulation.

It is hard to imagine that the weight of tradition can force one to adopt the atrocity of the sacral route, to reach the lower parts of the ureters, when modern surgeons are showing that the simpler, easier, and safer methods of trans-peritoneal or trans-vesical attack are available. I do not wish to leave the impression that the extra-peritoneal route should never be followed. The upper third of the ureter can well be reached by this method, and will perhaps require less perfect technique. But to illustrate by a simple case: A calculus has been shown by the *x*-rays to be lodged at the pelvic brim; to reach it by the extra-peritoneal route would require a long incision and extensive opening up of the retro-peritoneal tissues; if the urine is septic, you cannot avoid soiling the area, there is no way of keeping back the flow of infective material while operating, and it will be very difficult to suture the opening in the ureter effectually; also, as Deanesly has pointed out, a weak scar will result, with the probability of hernia.

On the other hand, by the trans-peritoneal method, the usual abdominal incision is made, the patient is placed in the Trendelenburg position, the bowels are packed off so as to obtain a good view, the ureter is controlled if necessary by a temporary ligature, the peritoneum and ureter are incised, and the stone extracted. The ureter can now be easily and perfectly closed, the peritoneum sutured over it, and the abdominal wound closed in the usual manner, leaving a sound wound with no danger of hernia. If prudence suggests drainage, it can easily be provided for before the posterior peritoneum is closed, by making a stab-wound in the loin down to, but not through, the peritoneum, forcing the blades of a long pair of forceps down to the site of the incision in the ureter, and introducing a drain in this manner. This gives drainage with a minimum amount of opening up of the retro-peritoneal tissues. The posterior peritoneum can now be closed, and the operation finished as above outlined. The whole procedure seems too simple to be true, but I have every confidence that some such method will soon supplant the procedure at present employed.

THE Ontario League for Medical Freedom was organized March 12th, in the Foresters' Hall, on College Street, at a meeting at which some fifty citizens were enrolled as members. The chair was taken by Mr. R. Carswell. The aim and purpose of the league is stated to be the dissemination of the information pertaining to and to safeguard through education the rights of the people against unnecessary, unjust, oppressive, fraternal, and un-British laws ostensibly related to the subject of health. It opposes the granting of a monopoly of healing practice to any system of healing; demands the right to employ any practitioner or system; opposes the establishment of State medicine; the attempted use of sanitation and cleanliness as a cloak for compulsory medical treatment; discrimination in favour of any school of healing in selecting officers to enforce health regulations, and the use of public funds in furthering the propaganda of any system of healing, and proposes a campaign of education to establish the principle of medical freedom. The president is Mr. R. Carswell; vice-president, Mr. J. D. Nasmith, and secretary, Mr. C. R. Munro, 2217 Queen Street East. —*Toronto Mail and Empire*, March 13th, 1912.

Editorial

EPIDEMIC DISEASES IN CANADA

FROM all parts of Canada reports come to us of the prevalence of small-pox. The disease has been endemic for over a year, although the type was mild. The reports now indicate that it is becoming epidemic and that the type is growing virulent. In Champlain county and L'Islet there is a very severe outbreak, and there are centres of infection all the way from Montreal to Quebec, notably at St. Casimir de Portneuf and at Ste. Anne de la Perade. In the latter place ten per cent. of the inhabitants were infected, and this condition has continued for eight months. In all there have been three hundred cases, and all are traceable to a patient who had been sent from Quebec. From Eniskillen township, eight miles from Petrolea, the disease was reported on March 8th; from Grand Valley twelve cases in eight houses on March 2nd; from Regina seven cases on March 8th; from Edmonton nine cases as long ago as February 11th; in Hull five cases on a single street; at Rigaud twenty-five cases in one school on March 9th; in Ottawa twenty-five cases were in the hospital on March 4th.

For a month, according to the Lethbridge *Herald*, business was at a standstill in Magrath on account of the quarantine which was found to be necessary. In British Columbia three hundred and forty-six cases were reported from twenty-two different localities during the year. As long ago as November 24th, cases were discovered at Beauport and three months were allowed to pass without any remedial measures having been taken. During the past month over sixty municipalities in Quebec gave notice that the disease was prevalent within their borders. During February there were seventy-three cases in Ontario, and there were even more than that in the corresponding month of last year.

The lumber camps in Northern Ontario and Quebec are badly infected, and cases are continually discovered upon the outcoming trains. According to the Kemptville *Advance* the chief magistrates of fifteen of the largest towns of the Ottawa Valley have signified their willingness to cooperate in a petition to the Ontario government that radical measures be taken to guard against the disease and to stamp it out when once it has procured a foothold. The concensus seems to be that a quarantine station or government hospital should be established at a point near North Bay, and the proposal is that there should be a thorough inspection of all men who have been working in the woods before they are allowed to come into more civilized communities. The mayor of Renfrew is outspoken in his opinion that the medical inspection in unorganized districts is carried on just as the lumbermen wish, and he deprecated the sending of medical students to do the work which should be performed by properly qualified inspectors.

The gravity of the situation is ill appreciated. In Ottawa a very efficient inspector was employed at a salary of one hundred and fifty dollars a month; but he was removed to make way for another who was willing to work for half the amount. The new inspector retained the position for twenty-four hours and then resigned.

In Quebec, at least, there is no need for laxity, as the law is very clear. According to article 3889 of the Code: "The Board of Health of the province, when for forty-eight hours after any order has been given by it to a municipal council, the same has not been executed, may, in urgent cases, upon being authorized thereto by two justices of the peace, cause its order to be executed at the cost of the municipality in default."

One comment runs through all the reports, and that is the almost total neglect of vaccination.

Typhoid fever appears to have been less prevalent than in former years, excepting in British Columbia. A slight epidemic is reported from Selkirk amongst employees in the public works department of the government at Lockport. These men were engaged in excavating a new ship-channel, and as they worked in bulk-heads driven under the ice in sewage laden waters the origin of the disease is not far to seek. In the Citadel at Quebec an officer, a non-commissioned officer, a bugler, and a number of children are reported as suffering from typhoid. From Fleming in Saskatchewan and from Hamilton, Ontario, come reports of an epidemic outbreak of mumps. In Hamilton forty-eight cases were reported on March 2nd. Measles is prevalent in Glenella, Wolseley, Edmonton, and St. John, New Brunswick. In Montreal scarlet fever has obtained a firm foothold, and two distinct outbreaks occurred in Notre Dame Des Neiges College. On the first occasion the authorities were not notified, and the pupils were allowed to go home for the Christmas holidays with disastrous results. Local occurrences are reported at St. Andrews College, Toronto, and at Upper Canada College, although this condition is not unusual each winter. The epidemic appears to be most severe in the district around Yorkton, where it is associated with diphtheria. The Moose Jaw *News*, of March 2nd, remarks that "this outbreak indicates how futile are the present health laws of Saskatchewan." The difficulty throughout Canada is not the futility of the laws so much as the laxity with which they are enforced.

DR. J. C. CAMERON

THE profession of medicine sustained a profound shock by the death of Dr. J. C. Cameron, of Montreal, which occurred so suddenly on March 16th, as it was not known even to himself that his health was seriously impaired. Some months ago he discovered by accident that his blood pressure was unusually high; and upon advice he moderated somewhat his daily work. Late on the night of Friday he had occasion to visit a patient during the heavy storm that prevailed. Upon his return he suffered from a cerebral hæmorrhage and death was almost instantaneous.

Dr. James Chalmers Cameron was the son of the late Rev. James Y. Cameron, of Niagara Falls, and was born at Aultsville, January 18th, 1852. He was educated at Upper Canada College, where he was head boy in 1870. In 1874 he graduated in medicine at McGill University, when he was final prize man. He was appointed house-surgeon at the Montreal General Hospital and remained until April, 1877. He then began a period of residence in the Rotunda at Dublin, and upon successive occasions studied in Berlin, Paris, and Vienna. Upon his return he was appointed to the chair of obstetrics at Bishop's College, and in 1886 became professor of obstetrics and diseases of children in McGill, a post which he held from that time till his death. As professor of obstetrics he was accoucheur-in-chief at the Montreal Maternity Hospital, and saw it grow under his direction out of humble quarters in St. Urbain Street to its present position as one of the largest and most influential institutions of the kind in Canada.

Many honours came to Dr. Cameron. He was president of the section on pediatrics at the pan-American Congress in Mexico in 1896, and in 1910 he became a fellow of the American Gynæcological Society. In addition he was a member of the Royal College of Physicians of Ireland.

For thirty-eight years Dr. Cameron was closely identified with masonry, and last month was elected an officer of the Grand Lodge of Quebec. He was master of a lodge in connexion with McGill, which was to have been dedicated March 29th. He was also identified with the militia service, and was surgeon in the Prince of Wales Fusiliers. Since 1884 he has been associated with St. Paul's Presbyterian Church. He touched life at many points. He was an ardent lover of music, and an excellent German scholar. He was a member of the Teutonic Club and was medical examiner for the German Army. He wrote with an admirable style, and his pen was always at the disposal of the profession. To the *Montreal Medical Journal*, and to the CANADIAN MEDICAL ASSOCIATION JOURNAL he was exceedingly kind, and his wider contributions to medical literature are well known. He was an accomplished physician, and in the special branch of medicine to which he devoted his life he had no superior. His taste in literature was fine, and as a lecturer he was remarkable for his fluency of speech and lucidity of statement. With all he was genial, and to the young practitioner he was especially generous.

In 1880 Dr. Cameron was married to Elizabeth Dakers, of Montreal, who survives him. His mother, Mrs. James Y. Cameron, is living in Toronto. One son, Mr. Dakers Cameron, lives in Montreal. Other members of his family are two brothers, Dr. John W. Cameron, Buffalo, and Mr. W. A. Cameron, Toronto. He will be much missed by his patients, who were always his friends, by the faculty, and by the profession at large.

ONTARIO

MANY radical alterations in the Health Act of Ontario are contained in a new bill presented to the legislature by the Hon. W. J. Hanna. The province is to be divided into ten districts, with a great deal of the power centralized in the Parliament Buildings of Toronto.

District health officers, who are to be paid an annual salary nor exceeding $2,500, and $1,000 for expenses, are to be created; local boards are to be reduced in number; compulsory notification of tuberculous diseases is provided for; better inspection of meat is demanded, and altogether, many excellent reforms are suggested.

As might be expected, a great deal of controversy has arisen in the press, and while bitter criticism is offered in partisan and local quarters, on the whole, it is recognized that the bill is a distinct step in advance.

The Hon. W. J. Hanna may be described as the one member of the government likely to act continuously in the right direction, where great humanitarian schemes are at stake. He has clear vision, a big heart, a capable brain, coupled with force of character, which, ordinarily, is not hampered by the demands of political exigency.

Unfortunately, even he is not always able to stem the tide of this commodity which has forced him to place weak men in positions requiring strong occupants, and at times his enthusiasm has died prematurely, but the splendid achievements at the prison farm near Guelph have earned for him the admiration and applause of the whole province.

The new hospital bill, which he is bringing forward this session, is also worthy of commendation, as it ensures greater facilities for medical education, making it possible for the universities to demand clinical material at any hospital receiving government aid, and also enabling hospitals to collect a reasonable maintenance rate from any municipality furnishing indigent patients to its wards.

The Medical Council is still in the limelight and regularly receives hard knocks from the provincial press. Some of these are deserved, others are unfair; on the whole though, the consensus of opinion is that the status of medicine is being endangered by the council. The *Ottawa Citizen*, on March 22nd, devoted a column and a quarter to this body, and even the *Queen's College Journal*, makes a complaint of the most doleful description. The burden of the song is that so often made before; viz., the selfish interests of the men composing the council being placed before those of medicine. The *University Monthly* (Toronto), somewhat humorously suggests that "the council, it must be admitted, has had its ear to the ground, and has kept it there so persistently that, like the ostrich, its head has become so deeply imbedded in the sand that it cannot hear the rumbling of the coming storm."

The exorbitant fee charged students by this body comes in for bitter criticism on all sides. In the meantime, we trust that Dominion registration will receive proper recognition in Ontario.

VACCINATION IN ONTARIO

THE mayor of Toronto has intimated to the Board of Control that he does not believe in vaccination. This confession of faith was made in reply to a letter from Mr. H. S. Southam, of Ottawa, urging the Toronto city council to cooperate with the Ottawa city council in opposing the proposed revision of the Vaccination Act. The mayor is entitled to his own beliefs, just as an inmate of an insane asylum is entitled to the belief that he can jump from a window and ascend in the air. But the patient who should attempt to put his belief into practice would injure himself alone. A public official who interferes with the practice of vaccination is a menace to the community.

The occasion for this deliverance of opinion arose out of the bill which was introduced in the Ontario legislature on February 12th, by Mr. Hanna. The bill is known as the "Vaccination Act," and according to the summary in the *Globe*, contains two important changes. Sections sixteen and seventeen in the old Act have been omitted entirely. The first provided that it should be lawful for school trustees to enforce the production of a certificate of vaccination before allowing children to attend school. Section seventeen contained a provision that where it is deemed necessary by the medical health officer, owing to the presence of small-pox, he may require a certificate of vaccination from pupils attending high schools, colleges, and universities. These sections have been replaced by one making the provision uniform, the government considering that there is no reason why a distinction should be made between private and public schools, and that the health authorities, and not the Boards of Education, are the proper authorities to control the situation, as they are charged with the duty of enforcing the health laws of the province. The penalty for violation of the Act is extended to one year instead of one month. Accordingly the control of vaccination of children would be taken away from school trustees and placed where it properly belongs, that is, in the hands of the health authorities.

THE VENTILATION OF SCHOOLS

THE astonishing discovery has been made that the most efficient means of ventilating a room is to open the windows. A report has been presented to the Toronto Board of Education by Dr. Charles J. O. Hastings, medical health officer, on the conditions of heating, ventilation, and general sanitation in each of the city schools. It represents investigations covering a period of about six months and discloses bad conditions of heating and ventilation.

Dr. W. E. Struthers, chief medical inspector of schools, declares in his report that the only solution of defective ventilation systems in the city schools, is afforded by the windows. He is supported in the theory by prominent health authorities, so we are informed by the *Globe* that the opening of windows forms the only adequate means of getting proper ventilation in schools. Mrs. Wise, who presides over a committee of women which for two years has been collecting information in regard to the condition of the public schools of New York, says there is nothing to take the place of direct communication with the open air, as in the old-fashioned practice of opening the windows.

Great discoveries are always simple, and we may now expect that children's bodies, at least, will no longer be poisoned by their detention in schools, whatever may happen to their minds.

ORGANIZATION IN ONTARIO

AN amendment to the legislation concerning the public health is now under consideration in Ontario. According to its terms the province will be divided into ten districts, each composed of five or more counties. The amendment will not fix the boundaries of the districts. That will be determined later, probably according to population, with the counties in each district grouped along the railway lines to allow the inspectors to cover the ground easily. Northern Ontario will likely be divided into two or three divisions, Temiskaming and the mining districts comprising one, and the rapidly developing territory to the west with Fort William and Port Arthur, Saulte Ste. Marie and Kenora probably making two more. The new provision will not apply to the larger cities which possess efficient health departments. The proposal is commended by medical men generally, and it is expected that it will meet with no opposition in the legislature.

UNQUALIFIED PRACTITIONERS

A BITTER attack was made in the legislature of Saskatchewan upon the medical Act in force in that province. Two members, J. A. Sheppard and George Langley, boldly opposed the authority of the Medical Council of the College of Physicians and Surgeons to set examinations qualifying for the practice of medicine. The discussion arose at the second reading of private bills to qualify Arsene Godin and J. H. A. Gravel as members of the College of Physicians and Surgeons. Mr. Sheppard contended that there was a country to the south-east of Moose Jaw into which fifty thousand people had come in the last five years, and that they were practically without physicians. It seems incredible that so large a population is without qualified physicians, considering how many graduate every year from the medical schools.

If such a state of affairs exists, the remedy is not to hand the people over to unqualified physicians, but to attract physicians under whose care the patients will be safe.

Dr. Thomson and Dr. Black, representing the College of Physicians, appeared before the committee and demonstrated the impossibility of awarding a license to men who were so completely unqualified. It appears that one of the petitioners had spent only one year at Laval University and a part of two sessions in an American college which has no recognized status in Canada. But all these troubles will be at an end when the Canada Medical Act is in operation, which, it is hoped, will be the case within the next few months. These private bills are the bane of the medical authorities, as few unqualified practitioners are so friendless that some member will not take up their cause, however flimsy it may be.

PUBLIC HEALTH IN TORONTO

DURING the last year the work undertaken by the department of health in Toronto has increased enormously. Some idea of what is being accomplished in the tuberculosis department may be gained from the fact that the six nurses have over eight hundred families under supervision, while in June, 1911, the number was only a hundred and twenty-six. The nurses in question fill a long-felt need in carrying instructions to the persons whom they visit, in keeping needy cases in touch with charity organizations, and in providing for the removal of advanced cases to proper institutions. All cases must be reported, and are subsequently kept in view. All houses vacated by tuberculous patients are disinfected. In the department of milk inspection, all inspectors are graduates of Guelph Agricultural College, who have taken the special course in milk and milk products. Their activity is shown by a fall in nine months from 80 per cent. to 15 per cent. in the number of samples of milk below the legal butter-fat standard. It is believed that a new by-law, which is in process of enactment, placing the responsibility with vendors, will prove most valuable. The sending of veterinary inspectors through the country on educational campaigns to the farmers has also been an important influence in raising the standard of the city's milk. Much has been accomplished, too, in the department of slaughter-house inspection. The compulsory Dominion examination for all inspectors has been of value, while the hoped for establishment of a municipal abbatoir will be of equal importance.

THE PUBLIC AND THE HOSPITAL

A COMPLAINT was made before the Board of Health of St. Thomas, on behalf of the Ladies' Benevolent Society, that a patient, Mrs. Humphries, had received ill treatment from a nurse at the Amasa Wood Hospital. The members of the Board of Health appear to have sided with the ladies and agreed that an investigation should be made. This information is contained in the Woodstock *Express* of March 1st. Three days later an interesting comment upon this grave charge was contained in the St. Thomas *Journal.* At the regular meeting of the St. Thomas Medical Association, which was held on the previous Friday, the unpleasant situation received a full discussion, and a series of resolutions was passed, which we think worth transcribing:

"Resolved, that we, the medical men of St. Thomas, have had practically no complaints in recent years from patients as to their treatment while in the Amasa Wood Hospital, but, on the contrary, patients invariably report to us that they have been highly pleased with the attention shown them during their stay in the institution. Being in constant attendance, we maintain that the consideration shown, and the care given the patients, compares favourably with that of any similar institution in the province. And furthermore, we are of the opinion, that in the past there have been citizens too anxious to circulate damaging reports without first thoroughly ascertaining the facts."

This is not the first occasion on which a great matter has been kindled by a very small fire, and we venture to suggest that in the end the physicians will have been found to be right in their judgement of the work done in this hospital.

NEW BRUNSWICK ASYLUM

THE sixty-fourth annual report of the New Brunswick Hospital for the Insane for the year 1911 has been issued by the superintendent, Dr. J. V. Anglin. At the close of the year there were 543 patients in the institution as against 531 during the previous year. The total number under treatment was 685 with a daily average of 540. The largest number of patients in the hospital at any time was 549, and the smallest, 530. During the year 148 cases were admitted; 77 were discharged, and 54 died. Since 1848, when the hospital began its existence, 7,245 cases have been received into the wards. Of these 2,874 were discharged as recovered; 1,211 as improved, and 2,830 unimproved. The total deaths numbered 2,324. From this it would appear that of all the cases admitted, over 56 per cent. left the hospital the better for their treatment. One-half of the patients admitted had been married and the total of all their children, so far as ascertained, was 286. In 60 per cent. hereditary taint was discovered. The recoveries were at the rate of 30·4 per cent. of the admission, which is below the average rate in that hospital, and this is accounted for by the large number of incurable forms of disease among the patients admitted. The duration of insanity prior to admission was under one month in 19 cases and under six months in 19 other cases. The mean age of recovery was 36 years. The average age of death was 54. Fourteen of the deaths occurred within a year of admission, but three patients who died had been constantly in residence for over forty years. The oldest resident, a female patient, has been in the hospital since the year 1860, and there is a male patient in residence since 1861. Eight patients have been in the wards over forty years, and 86 patients have been sheltered over twenty years. The total outlay at the hospital was $83,942. The cost per head was $155.45.

Although the hospital is procuring its supplies at as low a price as possible, the cost of living has increased steadily. In ten years the contract price for beef has risen from $6.25 to $9.40; for butter, from 19 cents to 25 cents; for oat meal, from $3.60 to $5.25; for sugar, from $3.75 to $5.80; for flour, from $3.80 to $5.25. The hospital farm yielded products to the value of $14,879. This report is a model of what a report should be. It is full of interesting facts presented in an interesting way.

Correction in table January, 1912, page 11: Column 7, read M--Mixed. Columns 9 and 10, read + Positive.

The Treasurer of the Association has sent drafts to members covering the amount of fees for the calendar year. He ventures to hope for a prompt acknowledgment on the part of the members.

The hardships sometimes involved in the conscientious fulfilment of his duty by the medical practitioner, are instanced in the case of Dr. J. Daves. Dr. Daves undertook a journey from Le Pas, Manitoba, to Cumberland House, a Hudson's Bay post in the north, where his services were required. During the journey Dr. Daves was severely frost-bitten, and, to add to their miseries, the sleighs on which he and his companion were travelling, crashed through the ice, and it was only with considerable difficulty that they were able to extricate themselves. Dr. Daves is at present in the St. Boniface Hospital at Le Pas.

The February returns of the Provincial Board of Health in Ontario show a reduction of nearly 60 per cent. in the number of contagious diseases over the corresponding month of last year. The total number of cases was 719 with 130 deaths, compared with 1,766 cases and 224 deaths in February,1911. The reduction in the number of cases of scarlet fever was from 619 to 108; of diphtheria, 213 to 176. The small number of cases of typhoid fever is the most gratifying feature in the report, as the number decreased from 476 to 34. It will be remembered that in February of last year the epidemic in Ottawa was at its worst, but the present winter has gone by without any notable epidemic.

Sir E. P. Morris, prime minister of Newfoundland, has received a letter from Mr. W. D. Reid, president of the Reid-Newfoundland Company, offering to build on a site provided by the government at St. John's, a sanatorium or hospital for tuberculous patients, to cost about $50,000, and, when fully finished and equipped, to be handed over to the government for management and control by them. In addition, Mr. Reid will undertake to build on sites provided by the government, a sanatorium or hospital in each of the sixteen electoral districts, each to cost about $3,000, and all to be handed over to the government for management and control, after full equipment. Sir E. P. Morris, in thanking Mr. Reid on behalf of the people of Newfoundland for his munificent offer, said that "this splendid manifestation of liberality and sympathy will do much to quicken public interest in the movement, and will assist the government materially in making the battle against the white plague one eventually to be crowned with the fullest success."

Very satisfactory reports come from the town of Timmins, a Porcupine settlement. A new hospital has been commenced, a board of health is to be organized immediately, and every care taken to ensure good sanitary conditions for the growing community, and pure water is to be secured from the base of the surrounding highlands.

In the annual report of the British Columbia Board of Health, Dr. Fagan, of Victoria, draws attention to the imminent danger from infectious diseases, owing in great part to the position of the province as a maritime country, and to the absolute necessity of notifying the Provincial Board of Health of any cases of infectious disease among persons arriving in the country. He speaks, particularly, of the difficulty of dealing with epidemics of small-pox, owing to the frequent lack of any marked symptoms until the disease is fairly established; and he emphasizes the consequent necessity for vaccination. He also speaks at some length of the use of antitoxin in cases of diphtheria, and points out that, whereas the death rate was formally about 48 per cent., it now varies from 9·5 to 11 per cent., this amelioration being due, for the most part, to the use of antitoxin. In connexion with this question, Dr. Fagan speaks of the great danger to individual life resulting from the supply of impure antitoxin, which is constantly being placed on the market. He recommends very strongly the establishment of a government laboratory for the manufacture of sera and particularly of antitoxin. The product would thus be made cheaper and, a still more important point, the purity and potency of the antitoxin would be assured. Three hundred and sixty cases of typhoid fever were reported during the past year. There is, however, every reason to believe that the number of cases was considerably in excess of that stated. The death rate was 28 per cent. The deaths from tuberculosis numbered three hundred and twelve. Dr. Fagan, in conclusion, makes certain recommendations in regard to the sanitation of the city, and speaks particularly of the evils existing in the logging, railway, and mining camps in the vicinity. An inspector, Dr. Davis, has now been appointed to take charge of this branch of work.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

INFECTIONS OF THE HAND. By ALLEN B. KANAVEL, M.D., with 133 engravings. Lea & Febiger, Philadelphia and New York.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION, Vol. XXVII, 1911.

STUDIES IN PSYCHIATRY, Vol. I, by Members of the New York Psychiatrical Society. The Journal of Nervous and Mental Disease Publishing Company, New York.

STUDIES IN PULMONARY TUBERCULOSIS. By F. G. GRIFFITHS, B.A., M.D. Baillière, Tindall and Cox, London.

THE PRESCRIBER. Edited by THOS. STEPHENSON, F.R.S.E., F.C.S. Vol. V. The Prescriber Offices, Edinburgh, 1911.

DIAGNOSIS AND TREATMENT OF SYPHILIS. By CARL H. BROWNING, M.D., and IVY MCKENZIE, M.A., B.Sc., M.B., CH.B. Lea & Febiger, Philadelphia and New York, 1912.

TREATISE ON TUMOURS. By ARTHUR E. HERTZLER, M.D., PH.D. Illustrated with 538 engravings and 8 plates. Lea & Febiger, Philadelphia and New York, 1912.

TUMOURS OF THE JAWS. By CHARLES L. SCUDDER, M.D. Cloth, $6.00 net; half morocco, $7.50 net. Philadelphia and London: W. B. Saunders Company; Toronto: J. F. Hartz Co., Ltd. 1912.

MODERN METHODS OF NURSING. By GEORGIANA J. SANDERS. Cloth, $2.50 net. Philadelphia and London: W. B. Saunders Company; Toronto: J. F. Hartz Co., Ltd., 1912.

Men and Books

By Sir William Osler

IX. The Funeral of Lord Lister. I have just come from the Abbey service,—the most splendid tribute ever paid to our profession, and so richly deserved in the person of Joseph Lister, one of the greatest benefactors of humanity. Voltaire saw Newton buried like a king in the same Abbey, and ever after esteemed it one of the glories of England that she was able to recognize the supreme merits of a king among men. To-day's ceremony was England's tribute of heart and head. The nation's Valhalla was packed to the doors; nurses, students, doctors, and the general public crowded in the nave, while the reserved seats of choir and transepts were thronged with a gathering of representatives from all parts of Europe. As one of the delegates from the University of Oxford I had a choir seat, which chanced to be next to our own Chancellor, Lord Strathcona. The recognition of the international character of Lord Lister's work was witnessed by the presence of nearly all the foreign ambassadors, and representatives of the Académies des Sciences of Russia, Sweden and Norway, Spain, and Rome. Among those who occupied seats were the Prime Minister, and many of his colleagues, Lord Lansdowne and the Duke of Northumberland. Opposite to me was a group of Lister's old Glasgow and Edinburgh pupils —Macewen, Caird, Littlejohn, Bramwell, Balfour, Playfair, and others.

Just before 2.30 p.m., after the organist had finished playing Chopin's "Funeral March," there was heard at intervals a distant voice, high above the silence. At first the impression was of some one singing outside. I was waiting for it, having had a few years ago, at the funeral of Lord Kelvin, the same experience. The choir coming through the cloisters sang the hymn, "Brief Life is here our Portion," and the high note at the end of the third line alone reached us in the clear, liquid voice of one boy. For three or four verses this was heard without another note of the full choir (the sound of which was not audible until the last verse), which finished just as the procession entered the Abbey. Preceded by the canons, the coffin was borne through the nave and choir covered with a purple pall and on it a magnificent wreath of orchids sent by the German

Emperor. The pall-bearers were Lord Rayleigh, Lord Rosebery, Lord Iveagh, president of the Lister Institute, the president of the Royal Society, the principal of Glasgow University, the president of the Royal College of Surgeons (Mr. Godlees, Lord Lister's nephew), Sir Watson Cheyne, and Professor Caird. Immediately following the family was a group of foreign delegates, MM. Chauveau, Dastre, and Pozzi from Paris; Garré, president of the German Congress of Surgeons, and Treub from Holland. Professor Chauveau, who must now be the *doyen* of French science, was a very striking figure with his fine face and head, and long white hair. It was a noble and ever-to-be-remembered occasion. And was ever Handel's grand anthem sung more fittingly?

"When the ear heard him then it blessed him; and when the eye saw him, it gave witness of him. He delivered the poor that cried; the fatherless and him that had none to help him. Kindness, meekness, and comfort were in his tongue. If there was any virtue and if there was any praise, he thought on those things. His body is buried in peace, but his name liveth evermore."

Only those who have lived in the pre-Listerian days can appreciate the revolution which has taken place in surgery. In the seventies at the old Montreal General Hospital we passed through it, and it is pleasant to recall that when Dr. Roddick returned from Lister with the technique there was no opposition, but the surgeons patiently practised a laborious and unnecessary ritual for the sake of the better results. As with everything that is worth preserving in this life there has been evolution, but from the great underlying principle on which Lister acted there has been no departure.

I wonder how many surgeons have taken the trouble to work through the literature of the growth of the method as given in Lister's writings? It is now available, and no surgeon's library is complete without these splendid volumes, published a few years ago by the Oxford Press—a worthy monument for the greatest Englishman of his generation.

Retrospect of Surgery

THE DIFFERENTIAL DIAGNOSIS BETWEEN GASTRIC ULCER AND CARCINOMA; THE PATHOLOGICAL ANATOMY OF THESE DISEASES IN RELATION TO THEIR RADIOGRAPHIC APPEARANCE.

THE use of radiography in the diagnosis of gastric disease is a most important advance. As its value was, however, at first overstated and later underestimated, an attempt is made in a recent paper by Prof. Dr. V. Schmieden to show its true worth. (*Archiv. fur klinische Chirurgie*, Band 96, Heft 2.)

Since the appearance of Schmieden and Härtel's publication in 1909, they have been constantly at work upon this subject, employing the rich material from Professor Bier's clinic. Many hundreds of cases have been examined and thousands of plates taken. Schmieden insists that radiography should not supplant, but rather supplement, the physical and chemical methods at present employed in the diagnosis of gastric disease. Often, however, fluoroscopic examination and *x*-ray plates render a diagnosis much more accurate, and in some cases a diagnosis is possible only by such aids. Further, not only may one look to the *x*-ray picture for a differential diagnosis, but one may also conclude from it whether a case is still operable or not. By means of radiography an early diagnosis should be possible, as in Schmieden's hands a series of small, still operable, but not yet palpable, tumours in the region of the pylorus were detected. Indeed, Schmieden considers that exploratory laparotomy should rarely be necessary for diagnostic purposes, but should be practised principally to determine whether a tumour already diagnosed and localized should be operated upon or not. A further advantage of this method is that it leads to a quick decision and renders unnecessary observations which may be extended over weeks.

In this branch of the diagnostic science one hears sounded again the cry which accompanies the diagnosis of cancer wherever met with in the body,—the cry that one meets with but few cases of carcinoma in the early stage. The reason for this is not fear of operation but is to be found in the prolonged, latent stage of the disease.

Stiller and certain other internists have disapproved of the use of radiography in the examination of the stomach, claiming that the bismuth x-ray picture is but a caricature of the stomach. These authors fail to recognize that inflation with air yields an even greater caricature and a condition which practically never exists in the stomach. Radiography effects the same result as air inflation in determining the position, form, size, and relation of the stomach to surrounding parts and to palpable tumours; moreover, it permits a functional test of the stomach and gives a graphic profusion of detail which cannot be obtained from air inflation. According to Stiller, one should avoid air inflation in all ulcerous processes (round ulcer, breaking down carcinoma), which means that the method can be employed only in a minority of the cases. In Schmieden's opinion the two methods cannot be compared.

Schmieden's method of examination is based upon that practised by Holzknecht. The patient is first given two drachms of bismuth suspended in two ounces of water, and its entrance into the stomach observed with the fluoroscopic screen. This heavy suspension is seen to flow rapidly along the lesser curvature towards the pylorus and to settle in the most dependent portion of the stomach. Any interruption in the downward flow is readily noted. Next, a mixture of bismuth and bread and milk or porridge is slowly eaten by the patient, and observations with the screen are made from time to time. During these observations the patient should be provided with a back seat rest in order that palpation may be carried out and the screen pressed firmly against the anterior abdominal parietes. Upon sheets of glass placed in front of the screen the outline of the stomach and changes in its contour are drawn rapidly in pencil. Subsequently paper tracings are made from these plates for permanent record. Finally, one or more photographic plates are taken to show the fixed alterations in the stomach contour. With all respect to the purely screen method developed by Holzknecht, Schmieden never omits the taking of a plate. Apart from its didactic worth, the significance of the plate picture is further increased the finer the details one is able to bring out for subsequent observation. It is further urged that the plate picture, if taken at the proper time, is a relatively simple radiological aid in diagnosis, whereas the fluoroscope is used with facility only by those having a special training.

The numerous illustrations contained in Schmieden's paper are selected to show the characteristic radiographic features of gastric ulcer and cancer, and impress one with the fact that one has to deal, not with accidental forms, but with differences of form which have their foundation in pathologico-anatomical and pathologico-physiological processes. The underlying causes of change in form give rise each to characteristic alterations in the contour of the organ. Thus, shrinkage of the stomach from carcinoma and contracture from ulcer give totally different shadow pictures, and in these variations lies the possibility of a differential diagnosis. Peptic ulcer of the stomach, for instance, results, first, in the formation of a flat cavity of the inner wall, the alteration in the contour being generally so insignificant as to yield at this stage no appreciable change on *x*-ray examination. The relation of spasm to ulcer is here, however, graphically depicted. Even a superficial ulcerative lesion of the lesser curvature may, through irritation of the circular fibres of the stomach, give rise to a marked indentation, resembling an hour glass constriction of the greater curvature. In such cases the detection of a tender point in the line of the lesser curvature opposite the apex of the constriction is considered by Schmieden conclusive evidence of the presence of ulceration. Such spasmodic deformity of the stomach may be observed for twenty minutes or longer under the fluoroscope, and is pathognomonic of florid ulcer. The administration of atropin hypodermically diminishes the extent of the spasm, but it is abolished only by general anæsthesia. These cases, in Schmieden's opinion, are included among those which at operation show nothing abnormal, are closed without internal exploration of the stomach, and are classed as hysterical, in spite of the recurrence of severe pain and vomiting,—the direct results of the existing spasm.

In the absence of spasm and the symptoms resulting therefrom, such an early flat ulcer fills and empties as does the remainder of the stomach, leaving no bismuth rest at the seat of disease and, therefore, no abnormal shadow. The further pathologico-anatomical changes resulting in free perforation are not, of course, subjected to radiographic investigation.

Of greatest interest are those cases in which slow destruction of the gastric wall is attended by the formation of adhesions between the stomach in the neighbourhood of the ulcer and the liver, pancreas, spleen, abdominal wall, mesocolon, omentum and gall bladder —less frequently the large bowel, duodenum, and diaphragm—terminating in what Schmieden designates as a "penetration." In these cases there exists a callous thickening of the stomach wall, which is essentially perigastric. Into the recesses of such a perforation cavity the bismuth meal penetrates, and remains as a deposit even after the emptying of the stomach. The penetration cavity may communicate with the stomach only by a very small opening. An air vesicle occupies its dome.

In chronic ulcer then, in distinction from carcinoma, there are marked inflammatory changes in the surrounding tissues and organs, and the ulcer tumour consists more or less of an inflammatory mass. In this way a palpable ulcer tumour is comparable to the inflammatory conglomerate tumour of chronic appendicitis. Again, in distinction from carcinoma, one sees radiologically in ulcer cases healthy stomach wall with peristaltic action extending up to the diseased area. On filling the stomach with bismuth, the walls rapidly expand. In carcinoma, on the contrary, peristalsis and radiographic deformity due to spasm are absent. In carcinoma the small, contracted, frequently funnel-shaped stomach, with defective contour, stands diagnostically opposed to the large, dilated stomach with well defined outline met with in ulcer—the dilatation of the latter being due generally to associated spasm of the pyloric sphincter. Characteristic, too, of new growth in the stomach wall is the abrupt failure in the bismuth shadow, generally to be seen in the pyloric region. In this location, also, one frequently sees in cancer a faint extension of the dense, bismuth shadow in coral-like branchings. Finally, the presence of a shadow in the course of the œsophagus, indicating regurgitation, speaks strongly for carcinoma rather than ulcer.

In support of the value of radiography in the diagnosis of gastric disease, it should be stated that Schmieden was able with the aid of combined stomach examination and radiography to make a correct diagnosis in all but one of the cases reported.

Schmieden concludes with the dictum that a modern, scientific worker in the field of gastric diagnosis should never make a diagnosis upon the radiographic picture alone, nor should he undertake a difficult gastric diagnosis without an *x*-ray examination.

Obituary

Dr. J. S. Munger, of Rodney, died of heart failure on March 13th. He was eighty-one years of age.

Dr. Walter Wells, of Waterloo, died March 10th. He was seventy-nine years of age.

Dr. L. L. Palmer died at his residence in Grimsby as the result of a paralytic stroke. He was one of the most distinguished medical men in Toronto, where he practised as an ear, eye, and nose specialist for many years. He was surgeon lieutenant-colonel of the Queen's Own Rifles for fourteen years, but retired from the regiment about five years ago. Dr. Palmer gave up his practice a year ago and went to Grimsby to live. He was sixty-five years of age.

Dr. J. B. Menzies, of Lachute, died from heart failure, brought on by over-exhaustion. He was summoned to visit a patient at Harmington, twenty-five miles distant. After driving fifteen miles, his horse became exhausted, and Dr. Menzies and his man determined to push forward on foot. After covering two miles, however, Dr. Menzies collapsed. His man hurried back for help, but on returning found the doctor dead. Dr. Menzies was a graduate of McGill and had practised in the district of Lachute for twenty-five years.

Dr. Robert Murray, of Woodstock, died February 24th, in the seventy-seventh year of his age. He was born in 1836 and practised medicine in Woodstock for the last twenty-five years.

Dr. Walter Taylor died in St. Catharines, February 13th, from acute pneumonia. Dr. Taylor was born in Dunnville in 1871, and was a graduate of the University of Toronto in 1899.

Dr. Frank J. Durocher died at Ecorse in February, in the thirty-eighth year of his age after a brief illness. Dr. Durocher was a graduate of Detroit Medical College, and had practised in Ecorse for nine years. His death was hastened by his exertions during the epidemic of scarlet fever amongst his patients.

Dr. J. W. Wright, of Picton, died February 29th, in the fifty-eighth year of his age after a short illness caused by pneumonia. Dr. Wright was a graduate of McGill in the year 1878, and was for many years medical health officer of the town in which he practised.

Dr. Frederick S. Yorston, of Truro, died on February 25th at Miami, Florida, where he had been spending the winter to regain his health. Dr. Yorston was a graduate of McGill University of the year 1890, and was one of the most highly valued physicians in the Maritime Provinces.

Dr. Thomas C. Scholfield died at Toronto, March 1st, in the seventy-ninth year of his age. The greater part of his professional life was spent in Bond Head and Thorn Hill.

Dr. Calvin Brooks McQuesten died suddenly at Hamilton on February 19th. He was the eldest son of the late Calvin McQuesten, M.D., and was born in Hamilton in 1837. He remained there until he entered Dartmouth College, where he took his degree in medicine. Before the outbreak of the civil war Dr. McQuesten joined the federal army as a surgeon and served throughout the war. At the close of the war he entered upon private practice in New York, where he remained until forced to retire on account of failing health.

Dr. George D. Maxwell, of St. Thomas, died February 29th in Porters, Texas, where he had gone in search of health.

News

The typhoid fever epidemic in Port Hope is becoming serious. Twenty-seven cases of the disease are reported. Measures are being taken to determine the cause of the outbreak.

Hamilton Road School, Dundas, is closed on account of an outbreak of scarlet fever. The epidemic of this disease in Walkerton has now been practically stamped out.

Seven cases of small-pox are reported from Regina, Saskatchewan. All the cases are strictly quarantined. An outbreak of smallpox is also reported from Winchester.

An attempt to better the health of the children attending the public schools of Owen Sound is being made by Dr. G. H. Murray. For the next six months, all children who appear to be in any way physically defective will be examined and steps taken to remedy the evil. Dr. Murray has generously offered his services gratuitously during this trial period. At the end of the six months, if it is thought advisable, a permanent medical inspector will be appointed.

The St. John Ambulance Association gave a demonstration of its work at the Russell Theatre, Ottawa, before Their Royal Highnesses, the Duke and Duchess of Connaught, and the Princess Patricia. The programme consisted of addresses by His Royal Highness and Dr. Montizambert, president of the Canadian branch of the association, the presentation of certificates of proficiency to members in Ottawa, and a competition between the eastern and western first-aid winners of the Canadian Pacific Railway system. Stereopticon views of first-aid work were shown and explained by Colonel G. Carleton Jones, director general of medical health. An address was also given by Mr. Harold Boulton, M.V.O., of London, England. The competition between the eastern and western sections of the Canadian Pacific Railway—Montreal and Winnipeg—evoked great interest, the westerners being victorious and, consequently, the recipients of a handsome cup presented by Mr. W. R. Baker.

An association of physicians has been formed in Western Manitoba. The officers elected are: Dr. J. S. Matheson, president; Dr. L. M. More, vice-president; Dr. H. Oliver McDiarmid, secretary-treasurer. The executive committee consists of Dr. Latimer and Dr. Hicks, of Brandon, and Dr. Clingan, of Virden.

Dr. Wesley T. Rich, medical officer of health for the township of Melancthon, has been unsuccessful in his action against the Board of Health. The claim in question amounted to thirty dollars, and was for expenses incurred in disinfecting two houses after quarantine had elapsed.

Some difference of opinion was expressed at a meeting of the Board of Education in Hamilton, in regard to the new Health Act, by which the medical health officer is given the right to enforce compulsory vaccination.

THE university of Toronto has received from Mrs. William Freeland the gift of an endowment for a fellowship in anatomy in memory of her father, the late Dr. James H. Richardson, who for many years was professor of anatomy in the Toronto School of Medicine and the University of Toronto. The fellowship is to be known as the James H. Richardson Research Fellowship in Anatomy, and is of the value of $500. It is open to graduates of recognized universities and medical colleges, and to students of the University of Toronto who have completed the third year of the medical course in that institution. The holder of the fellowship will be required to devote his entire time during the tenure of the fellowship to investigation in anatomy under the direction of the professor of anatomy in the University of Toronto.

AT a meeting of the Port Arthur Board of Health, held on March 6th, a resolution was passed that physicians report any contagious diseases to the medical health officer, or to the Board of Health, within twenty-four hours.

SMALL-POX in Regina is assuming alarming proportions. Several fresh cases have been reported and a serious epidemic is feared, despite all precautionary measures.

SCARLET FEVER is still very prevalent in St. John's, Newfoundland. Fifty-six persons are at present suffering from the disease.

TWENTY-NINE cases of typhoid are reported from Port Hope. Dr. McCullough is in charge of the outbreak, which, it is feared, may be a serious one.

AN epidemic of scarlet fever and diphtheria is reported from Rhein, Sask. Five deaths occurred and fifty or sixty people are suffering from one or other of the diseases. An outbreak of diphtheria is also reported from Espanola, Ont. At Midland, Ont., the schools are closed, owing to an epidemic of scarlet fever.

FROM St. John's, Newfoundland, come reports of an outbreak of scarlet fever, twenty-five people being stricken with the disease. A case of small-pox has also been reported in that city.

The new site for the Toronto Hospital for the Insane at Whitby consists of six hundred and twenty-five acres of rich land on the lake front. Situated as it is, extending from the harbour on the south to the railway station on the north, every facility is provided for approach, both by water and rail. Plans are in the hands of the provincial secretary, and it is expected that building operations will commence immediately.

The new pathological building of Toronto General Hospital is open and work is in progress. The space in the medical building vacated by the department of pathology, bacteriology, and pathological chemistry is rapidly being taken up by the department of physiology.

Dr. G. Sterling Ryerson, founder of the Canadian Red Cross Society, has been appointed representative of the Canadian government at the Ninth International Red Cross Congress to be held at Washington from May 7th to 17th.

On April 1st work is to commence on an addition to the Hospital for Sick Children in Toronto. The new building will consist of an out-patient department, an infectious department, and a pathological department, while the top floor of the present building will be utilized for the installation of a complete new operating suite. The alterations will cost altogether about $250,000.

Dr. G. M. Bowman, of Regina, has given up his practice and he has been succeeded by Dr. Connell, of Indian Head.

Dr. R. B. White, who was recently appointed medical officer to the Kettle River Railway Company, has opened a small hospital in Merritt, where the men will be cared for who may happen to be injured on the construction work.

Dr. A. A. King, the retiring medical health officer at Ladner, has presented his annual medical report. During the year there were two cases of diphtheria, fourteen of scarlet fever, six of smallpox, five of typhoid fever, ten of whooping cough, and six of tuberculosis. In every case prompt measures were taken to prevent the spread of the diseases.

The Kingston Medical Society has appointed a committee to prepare a schedule of fees. It is expected that the fees will be from 25 to 50 per cent. in excess of the antiquated scale which is now in existence.

A MILITARY medical camp will be held in London early in June. All the ambulance field units and divisions one, two, and three, will be gathered there for inspection. There are about eight hundred men in these units, and in addition there will be about eighty physicians from all parts of the province. Colonel Jones, of Ottawa, will be in charge of the camp of instruction.

ACCORDING to the fifth annual report of Dr. P. A. McGarry, health officer for Canso, the health of that town appears to be remarkably good. Only one case of diphtheria is reported, and one of tuberculosis. Dr. McGarry remarks that the citizens are making great progress in combating the progress of all infectious and contagious diseases, and that they are the first to report them to the authorities.

ACCORDING to the report of the Brandon General Hospital for January, one hundred and forty-two patients were admitted during that month and one hundred and twenty-seven were discharged. The medical staff was increased from eight to twelve, and for the year it will be as follows: Drs. E. C. Beer, A. T. Condell, J. H. Edmison, M. S. Fraser, J. McDiarmid, L. M. More, J. S. Matheson, C. P. Templeton, W. O. Bigelow, A. Lawther, A. S. Sharpe, and T. J. Anderson. Specialists (eye, ear, nose and throat)—Drs. G. H. Carlisle, V. E. Latimer, A. O. McDiarmid. A regulation was put in force to the following effect: "That before a patient suffering from tuberculosis or any other contagious or infectious disease, on which there is any doubt, can be admitted to the hospital, the case shall be submitted to three physicians, one being the physician attending the patient, one the hospital doctor for the month, and the third to be chosen by these two.

DR. J. F. ADAMSON has left Innisfrae to begin the practice of medicine in Edmonton.

FROM the latest edition of the Canadian Osteopaths' Directory, it would appear that there are sixty-three persons qualified to engage in osteopathy; that is to say, they have taken a course in some institution in the United States.

Dr. A. B. LeMesurier, of the staff of the Sick Children's Hospital, Toronto, passed the competitive examination of the Bellevue Hospital at the head of the list. Dr. R. A. Jamieson, of Toronto, stood second. This earns for Dr. LeMesurier the appointment of house surgeon at Bellevue. He is a graduate of the University of Toronto in 1910. Dr. Jamieson will join the Bellevue staff in July next. Forty-four candidates competed for this position.

A proposal to amend the medical act of the province of Quebec so that bone setters might be allowed to practise their art was defeated on February 29th, after a discussion which lasted three hours, by a vote of thirty-two to twenty-three. The Premier stated that while he knew there was a great deal of popularity to be gained by supporting the motion and the bill, he was against them, because it was a question of giving to the medical profession the same protection which the other professions enjoyed. At present prosecutions were chiefly in the hands of the Medical Association, and actions were never taken in cases where real good had been accomplished.

Dr. W. R. Morse, McGill '02, late of Providence, R.I., who is a medical missionary of the American Baptist Foreign Missionary Society, is at present at Hankow, China, temporarily in medical and surgical charge of the International Hospital.

The report presented to the Board of Control in Montreal by Dr. Laberge, medical health officer, on February 27th, showed that out of a total of 59,685 children examined by the municipal health authorities during the past year, 27,349, or almost 50 per cent., were found to be in an unhealthy state. Of this number, 19,843 were suffering from diseases of the mouth, defective and decayed teeth, and gum affections. Of the remaining 8,000 or more, 1,416 had to be sent home from school; 2,140 children were found to be not vaccinated. Notices to have their children immediately looked after by their family physicians were sent in 20,028 instances, while 634 children had to be specially treated for bad eyesight.

At the Montreal General Hospital in 1911 the total number of indoor patients treated to a conclusion was 4,146, an increase of 500 over the previous year, and the largest number treated in any year in the history of the hospital. Of this number 303 remained over from last year; 4,170 were admitted during the year, and 215 remained in the hospital at the end of the year. There were discharged from the hospital 3,843, and there died in the hospital, 303. The mortality was 7·3 per cent., or 4·1 exclusive of deaths occurring within three days of admission. The average number of days in the hospital per patient was 18·42, and the aggregate number of days in the hospital by all patients was 76,371, an increase of 1,345 as compared with the previous year. The average daily cost per patient was $2.14. Of the indoor patients treated to a conclusion, there were 2,600 males and 1,546 females, making a total of 4,146. There were 2,691 non-pay patients, 651 public pay patients, 307 private patients, and 496 semi-private patients. Of the 4,146 treated, 2,025 were natives of Canada; 1,125 of the British Isles; 248 of the United States; 218 Russians; 150 Italians, and 320 divided among twenty-two nationalities. In the out-patient department, the total number of new patients treated was 14,511; the total number of consultations was 60,687, an increase of 1,004 over the previous year. Twenty-five nurses received diplomas during the year, making a total of 383 that have passed through the training school since its establishment.

At the annual meeting of the Waterloo County Medical Association, held February 27th, the following officers were elected: president, Dr. D. J. Minchin, Berlin; first vice-president, Dr. C. T. Noecker, Waterloo; secretary, Dr. J. E. Hett, Berlin; treasurer, Dr. T. H. Kalbfleisch, Berlin. Dr. MacKenzie, of Toronto, addressed the association on the subject of infantile paralysis.

MILITIA MEDICAL OFFICERS

The association of medical officers of the militia of Canada in session at Ottawa, February 29th, elected the following officers: honorary president, Colonel Hughes, minister of militia; honorary vice-president, Lieut.-Col. E. Fiset, Ottawa; honorary second vice-president, Col. G. C. Jones, Ottawa; president, Lieut.-Col. A. T. Shillington, Ottawa; first vice-president, Lieut.-Col. Fotheringham, Toronto; vice-presidents, division I., Major D. H. Hogg, London; division II., Lieut.-Col. D. W. MacPherson, Toronto; division III., Major J. W. Shillington, Ottawa; division IV., Major E. Pelletier, Montreal; division V., Major W. H. Delaney, Quebec; division VI., Lieut.-Col. J. Ross, Halifax; district X, Major T. Watt, Winnipeg; district XI., Major F. C. MacTavish, Vancouver; district XIII., Major L. S. McKidd, Calgary; secretary, Captain

G. H. Leggett, Ottawa; assistant secretary, Lieut. Neil McLeod, Ottawa; treasurer, Capt. F. M. Bell, Ottawa.

THE HEALTH OF TORONTO

Dr. Hastings, medical health officer of Toronto, has issued his annual report. During the past year 104 dwellings were condemned as unfit for human habitation. Of these 75 were pulled down, and the others were remodelled. Of 45 lodging houses only 4 were found to be in a satisfactory sanitary condition, and 10 were ordered to be closed. Under the order that all cases of tuberculosis should be reported, 1,154 cases were recorded. Of these, 814 cases, comprising 750 females, are under the supervision of the assistants of the department. In the laboratories 21,881 specimens were examined in addition to many tests of the municipal water supply. It is satisfactory to note that no bacilli coli communi have been discovered since the water has been filtered and treated with chlorine. Dr. Hastings reports that 29,171 cattle, 57,222 sheep, 23,611 swine, and 12,345 calves were slaughterd in the city during the year, but that only 9,323, or 7 per cent. of the total, were slaughtered under inspection.

ONTARIO MEDICAL ASSOCIATION

The following is the programme of the Ontario Medical Association, which will begin its meeting in Toronto on May 21st and continue until May 23rd: Symposium on Headaches—Ætiology and Classification—Treatment; medical, surgical, and ophthalmological aspects. The surgical aspects will be dealt with by Dr. Middleboro, of Owen Sound.

In the afternoon there will be meetings of sections, and in the evening the president's address will be given. After that an illustrated lecture on experimental medicine will be given by Professor Alexis Carell, of the Rockefeller Institute. Refreshments will be served in the Convocation Hall.

On Wednesday clinics will be given in the university buildings and luncheon in the quadrangle. In the afternoon the sections will meet and a garden party will be held. The evening will be devoted to the address in surgery and to a symposium upon exophthalmic goitre. The ætiology and pathology will be discussed by Dr. W. T. Connell, of Kingston, and the surgical treatment by Dr. Ingersol Olmsted, of Hamilton. The discussion will be opened by Dr. A. T. Shillington, of Ottawa.

On Thursday, May 23rd, the morning will be devoted to clinics at the various hospitals and in the evening the annual dinner will be held at 7 p.m.

Canadian Literature

ORIGINAL COMMUNICATIONS

Canada Lancet, March, 1912:

Ulcer of the Stomach and Duodenum	W. J. Macdonald.
Imperforated Rectum	John Ferguson.
Appendectomy on Shipboard	E. Bryceson.

Le Bulletin Médical de Québec, December, 1911:

Notes sur un porteur chronique de vibrions cholériques	Prof. J. G. Adami, Prof. A. Vallée, Dr. G. E. Martineau.
A. P. M. IXe session d'études.	
Le XIIe Congrès de médecine et l'Association des Médecins de langue française	Dr. A. Vallée.

The Canadian Journal of Medicine and Surgery, March, 1912:

The After Treatment of Nose, Throat and Ear Operations	Perry G. Goldsmith.
An Unusual Case of Recurring Hæmoptysis Due to a Small Aortic Aneurism	H. B. Anderson.

Le Journal de Médecine et de Chirurgie, February, 1912:

L'Enseignement Médical aux universités d'Europe et d'Amérique.—En France: II. Les Ecoles Médicales de Lille.—L'organisation de l'Université Libre de Lille	Eugène Saint Jacques.
La mort apparente et la mort réelee	J. J. Desroches.
Le traitement des tuberculoses osseuses et la correction des difformités à Berck-sur-Mer. Les prof. Calot et Ménard	Eugène Saint-Jacques.
Le traitement de l'éclampsie.	J. Jeannin.

Medical Societies

TORONTO ACADEMY OF MEDICINE

The general meeting of the Toronto Academy of Medicine, held on March 5th, was addressed by Professor Richard M. Pearce, of the University of Pennsylvania, on the subject of Medical Research in America. Dr. Pearce, in opening his paper, stated that the past and future of his subject presented four important aspects. These were: (1.) The epoch making labours of isolated individuals. (2.) The application of the exact methods of physics, biology, and chemistry to medicine. (3.) The development of laboratories for the organized investigation of medical problems. (4.) The idea of diminishing suffering and ameliorating social conditions.

The first factor suggested such names as Vesalins and Paré. The second brought to mind the early English and French physicists, such as Cavendish and Gay Lussac, and later, Pasteur, Ehrlich, and Metchnikoff. The third reminded one of modern institutes, such as the Pasteur Institute of Paris or the Rockefeller Institute of New York; while the fourth, expressed by Pasteur as a desire to contribute to the welfare of humanity, should be seen in the work of every great investigator. To fulfil this latter ideal the medical worker should be actuated not by an abstract interest in human ills, but should have a direct interest in the prophylactic, hygienic, and social problems of the community in all its classes.

An important side of the subject was the relation of research to the university. Apart from other considerations research was likely to result in more competent and alert teachers. Such teachers would attract the best trained men, and the consequence would be an advancement of the standing of the university. It was evident that the establishment of research chairs was essential.

Such establishment had in the past come about in various ways. In some cases it was the result of the multiplication of chairs devoted to one general subject, as at Harvard, which has chairs of comparative physiology, pathology, and anatomy, each distinct from the chair responsible for fundamental undergraduate instructions in physiology, pathology, and anatomy. In both Harvard and Washington independent departments of preventive medicine yielded excellent opportunities for the study, not only of infectious diseases, but also of causative industrial conditions, such as poverty and insufficient methods of preparing and handling foodstuffs. Further, similar examples could be found in the recently established departments for the study of tropical diseases at Pennsylvania and Tulane. The value of the union of hospitals and laboratories for such purposes has been of great value, while it should be remembered that in addition to the investigations of special diseases the universities have opened to them the broader field of the relation of social condition to disease (Richard Cabot). Outstanding instances of the latter activity might be found in the Rockefeller Foundation for the study of social conditions determining the occurrence of hook-worm disease, and the department of the University of Pennsylvania which is devoted to the sociological study of tuberculosis.

Professor Pearce predicted that the breaking down of the original hard and fast lines drawn about the institutes of medicine would continue. Immunity, bacteriology, and protozoal diseases would become separate and distinct studies. This and the tendency towards recognition of the hospital as a place for research must be two ever-increasing forces in the university. Aside from these the endowment of research chairs and research outside the university would stimulate the activities of the better university schools where research and teaching are combined. These latter functions should continue to be combined; for, while research professorships must be occasionally desirable, every professor of medicine or surgery should be engaged in constructive work. The head of a department of medicine should be a man familiar with the problems of clinical medicine, trained preferably as a pathologist and adequately grounded in physiology and chemistry. In order to make his work effectual he should have the use of beds in the university hospital.

In conclusion the speaker suggested that future advances in medical research would result from: (1.) Organized laboratory effort based on exact experimental methods. (2.) Organization of the laboratory and the hospital by the university, so that the advance of medical research might continue side by side with teaching, as a university function of benefit to the student, the faculty as well as to the state, the general public welfare, and the advance of civilization.

The paper was discussed by Prof. Leathes, Dr. Caulfeild, Prof. A. B. Macallum, Prof. Mackenzie, and Dr. H. B. Anderson. Mr. I. H. Cameron moved a vote of thanks, which was seconded by Prof. McPhedran.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The ninth regular meeting of the society was held Friday, February 2nd, 1912, Dr. D. J. Evans in the chair.

Living Cases: 1. Aortic Aneurysm with Skiagram, by Drs. H. B. Carmichael and R. Wilson. Dr. Wilson showed three plates illustrating this case. A large plate, taken practically instantaneously, shows a very sharp outline, the apex as if caught in active contraction, this, making the heart smaller, has dilated the aneurysm very markedly. The two small plates of the aneurysm itself show the heart in contraction with the aneurysm dilated, and in the other the heart dilated, with the aneurysm very much smaller. The plates were taken at about one-thirtieth of a second.

2. Case showing the Thalamic syndrome by Dr. C. K. Russel.

Discussion: Dr. C. K. Russel. Dejerine collected eight cases in which he got four autopsies and he presented these cases before the Neurological Society at Paris in 1906. He had already spoken of this syndrome in 1903 and 1905. With Dr. Roussy he elaborated this syndrome, presenting the microscopic slides of the thalamus with the lesion found. His description of these cases is absolutely identical with that of the present patient, and I have very little doubt that the lesion in this case is in the thalamus. I did think of a parietal lesion because of the astereognosis, but I do not think that a lesion here would cause the choreo-athetoid movements. Evidently the lesion was of vascular origin because of the sudden onset, but whether thrombosis or hæmorrhage I am not prepared to say. The blood pressure is at present a little high. A pure lesion of the posterior capsule would not give astereognosis, and one would have a definite loss of sensibility, to say nothing of the likelihood of injury to the optic radiations causing a hæmanopia. It is remarkable that none of these cases that Dejerine showed have lesions of the field of vision, though various mixed forms are of course recognized where the lesion involves the thalamus and the internal capsule fibres.

The Vagaries of Gonorrhœa by Dr. J. R. Goodall. The following are the points taken up by Dr. Goodall: biology of the gonococcus, its modus operandi; the wide ranges in degree of susceptibility of patients; immunity and septicæmia; importance of pregnancy and especially of the puerperal state following abortion, miscarriage, or full term labour; clinical facts in respect to gonorrhœal cystitis, sterility, and the antagonism of other diseases to gonorrhœa; cryptic gonorrhœa in the parous woman; the great danger of the curette, and lastly, some of the close and remote results of conservative operations in gonorrhœa.

Discussion: Dr. F. J. Shepherd. I was very much interested in this paper and I think I even understood it. I should like to object to one statement, namely, the revolutionary effect of Dr. Winter's paper in that sterility often rests with the male. The general surgeons have known this for over thirty years, but the gynæcologists have never really recognized this till more recently, and many have been the operations performed upon the female for sterility when it was well recognized among surgeons that the male was at fault. It was well known that double orchitis, posterior urethritis, etc., produced sterility.

Dr. W. W. Chipman: Dr. Goodall, in referring to the woman's side in the question of sterility has emphasized Winter's work, and has merely instituted a plea, and a very forcible one, against many operations being performed upon women by reason of their sterility. What Dr. Shepherd has brought out has been known by most of us for a good many years. Certainly I know that as far as my own experience in Montreal is concerned everything is done to discourage a woman from having any operative measure performed upon herself for the sake of sterility. I enjoyed the review Dr. Goodall has given of the life history of the gonococcus; he has brought out clearly the life history of the organism as it exists, and has reminded us that while it is easily killed outside the body, yet how difficult it is to reach the organism when once inside. As to the question of general systemic infection, it occurs very rarely save where there has been some trauma; the only exception that I have met with to this general statement is that I have seen several times systemic infections follow acute gonorrhœa in children. This is a very acute disease in children and I have seen it where there has been no trauma. It is extremely rare in the adult unless there has been some trauma. Another interesting point is that gonorrhœal cystitis does not exist. The antagonism that syphilis exerts is also a new and interesting thing, and also the point that in acute fevers the progress of these is after all the best thing that could happen to a woman suffering from chronic salpingo-oophoritis. Latent gonorrhœa, of course, presents after all the greatest number of vagaries. The description Dr. Goodall gives that it really begins in the upper half of the vagina and the stress he has laid upon the importance of granular vaginitis I thoroughly agree with.

The uterine curette should only very seldon be used at all. I should say that a man with an average practice who curettes six or eight cases in the year has done all that he should do with the curette. Especially is this true, of course, in patients suffering from any chronic infection in the pelvis, and certainly from gonorrhœa. Only use the curette where there is a distinct indication for its use—increased hæmorrhage and increased inter-menstrual discharge, conditions in which you may use it safely, provided that the uterine appendages are healthy. Dr. Goodall's plea for conservatism we all agree with; one cannot be too conservative in these cases. Encourage the patient to undergo treatment, do not ask her to come to your office for a tampon once or twice a week, because that treatment may go on for two or three years and the injury sustained by walking there and back may undo any good she may have acquired. Put her to bed or confine her to her room for periods of six weeks and treat her systematically and you will get a result in six weeks that you won't get in three years if she walks back and forth to your consulting room.

D. N. Viner: I should like to ask Dr. Goodall a few questions: First, I have had occasion to see quite a few cases of Neisser's vulvovaginitis in infants and young children, and I would like to know what are the chances of ultimate recovery and of child-bearing in these cases. Secondly, if the infection of the ovaries and tube is not gonorrhœal is the old tampon method of treatment objectionable? Finally, what is the treatment for skenitis?

Dr. M. Lauterman: One or two details interest me especially, and I would like to know if Dr. Goodall has considered in any sense the relationship between the gonococcus and the other microörganisms that are usually found associated with it. It seems to me that the classical case is very largely the exception rather than the rule, and while I have never done any work in this connexion myself, I imagine that there would be a field which would give considerable information if it were possible to ascertain the relationship existing between the presence of the colon bacillus, for instance, when associated with the gonococcus. It seems to me that that constitutes the explanation in some instances of systemic infections. I had two cases following, as far as we were able to determine, a pure vaginitis. I can only agree with what Drs. Chipman and Shepherd have said with reference to sterility in the male having been known many years before Winter's well-known article was offered to the profession. The relation between gonorrhœa and syphilis and other acute infectious diseases exists in other spheres and as regards other microörganisms. There is no doubt that the phagocytosis that is produced by one form of organism influences any other organism that may be found elsewhere in the economy. At Olshausen's clinic it was his rule before curetting for sterility to leave a vaginal tampon well up against the cervix for twelve to twenty-four hours, and in the great majority of cases gonococci were to be found in the very small bead of greyish exudate on that portion of the tampon that was directly applied to the os. As to the so-called cure that Dr. Goodall refers to, there is no one part of the profession to blame for this, the profession generally is to blame, they do not sufficiently impress the male sufferer with the importance of his disease and with its danger to everybody with whom he comes in contact, and for this reason as soon as the patient experiences relief from the most prominent symptoms that worry him, he considers himself cured. I have had cases of men going along thinking that they were perfectly well and at least 75 per cent. showed the presence of latent or residual gonorrhœa. I do not think I am overstating the position when I say that 75 per cent. of those affected and treated by the routine methods carry about residual gonorrhœa and are in a position to infect others; men once infected, in the majority of cases, remain infected, and, what is even more important, infective.

Pathological Specimens: Dr. L. J. Rhea.

1. Patient aged fifty-six years; died of lobar pneumonia. Specimen shows thrombus in vessel leading to infarcted area; it is undergoing necrosis and abscess formation.

2. Male, dying of pneumonia. At autopsy liver showed great number of small cysts, which were due to the bacillus ærogenes capsulatis.

3. Specimen from a man aged sixty-eight years, who was assaulted on the street. Three months later he began to complain of headache and dizziness, and inequality of the pupils. Died of meningitis. An abscess was found on the right occipital lobe and acute purulent meningitis.

Case Report: Regeneration of the liver, Dr. F. B. Gurd.

Discussion: Dr. J. Kaufmann: With regard to the literature of such cases, Dr. Gruner sent to the pathological museum of the college about a year ago a very similar specimen to that just described, the only difference being that the right lobe was even smaller. I would like to ask Dr. Gurd what were the changes in the circulation in his case in the liver, and if there was any existing pathological condition in the vessels which form the portal vein. Dr. Gruner regarded the condition as being syphilitic in origin.

Dr. F. B. Gurd: In the liver itself there appeared to be a reproduction of the liver lobules as such, apparently by a budding of lobules *in toto*. The vessels were in proper relation to the cells and apparently of normal size and properly formed.

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INFLAMMATORY CYSTS AND CANCER OF THE BREAST

By Oskar Klotz, M.D.

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FOR many years discussions have centred around the question of the association of cancer to inflammation, and from the various viewpoints of the subject there have developed many outspoken opinions and some theories. By some it has been shown, and to themselves conclusively proved, that inflammation was an important aetiological factor in the production of cancer, others found that all gradations could be observed between chronic inflammatory reactions and beginning cancers; while some again believed the inflammation to be only a coincident reaction in the cancerous process. The substance of each of these views has been expressed in the early history of scientific medicine, and since then there has been a constant reiteration of the same opinions; but we must admit that only recently has any satisfactory demonstration of a relationship been forthcoming. Even much of the evidence of this association which is offered to-day must be discarded.

In an excellent paper, in 1877, Friedlander discusses the occurrence of a typical epithelial growth, both in connexion with inflammation and with cancer. His observations show that the healing process of many epithelial structures is accompanied by proliferative changes which, as processes, are atypical, and in which, too, atypical cells are found. The skinning over of indolent ulcers gives rise to unusual activity on the part of the surrounding epithelium. Active mitosis leads to a thin film of epithelial cells which stretch inwards from the border, while larger islands of epithelial cells appear at some distance from the margin. In each of these areas the epithelial cells have taken on an unusual tendency to grow, and although a few columns of cells may be found dipping into the granulation tissue, the tendency is for the growth to remain on the surface. In this temporary, new rôle of activity, the epithelial cells alter their appearance very much. It is observed that the cells show little tendency to keratinize, they are more protoplasmic, and are easily distorted by local pressure, while irregular nuclear figures are occasionally found. Similar changes may be observed in chronic fistulæ opening on epithelial surfaces. The epithelial cells surrounding the areas of chronic inflammation are stimulated to activity and tend to reproduce their structures as nearly as possible. Other examples of this reaction to inflammation on the part of the epithelium, are found in lupus, ulcers from repeated burns, focal formalin dermatitis, *x*-ray burns, and varicose ulcers.

Each of these lesions has a common process, a reaction of epithelial cells to an inflammatory condition in a neighbouring tissue, but itself not an inflammation.

In viewing the causes contributing to the vegetative activity of the epithelial cells, several points stand out quite prominently. Tissues of all kinds are subservient to their vascular supply, and to the nutrient materials brought to them. There is a definite balance in which the functional activity of the cell and the energy supplied through the nutriment equalize each other. When this balance is arrived at, life in the cell may go on merrily, and without nervous control. With, however, the varying demands put upon a tissue, or upon the vascular source of supply, this balance is not easily maintained, and it is here that a nervous mechanism in reacting upon one or the other is required. Further, it is well to view the activity of the cell in the terms of energy available. Given that a certain cell has a definite amount of energy, we find that it may expend this in two ways. A certain amount of energy is required to carry on the metabolism of the particular cell, that it may functionate in its proper capacity in the general economy of the body. Another amount of energy is necessary to permit the cell to bring about a reproduction of its own kind, when such is necessary. We are familiar with the fact that the latter, the energy for vegetative activity, is very great in embryonic life, so that the cell has little or no energy left to carry on function; while, on the other hand, in adult life, the vegetative activity of the cells is almost at a standstill, and almost all the energy is devoted to the carrying out of the specific function of the cell. What forces direct the cell to expend its energy in one way or the other is not quite clear. Still, we have certain facts which indicate some of the causes which alter the activities of vital protoplasm. Broadly speaking, influences which alter the activities of cells, we call stimuli; and the important stimulus quickening the cells in processes of reproduction, is commonly some form of inflammation. Now it may not be that the reaction of inflammation in itself causes cells to multiply; but the combined forces, including the initial agent bringing on the inflammation, as well as the stimuli which develop during the course of the inflammatory process, each tend to irritate the surrounding cells to activity. These new stimuli consist mainly of chemical compounds, probably the products of cell disintegration.

The above conception is similar to that expressed by von Hansemann in anaplasia. Von Hansemann's hypothesis indicates that by some means certain cells have suffered modification, so that they no longer possess the differentiation exhibited by the mature tissue from which they were derived, but have acquired, or reverted to, a blastocytic type with increased powers of growth. In other words, von Hansemann gives us a statement as to the nature of cancer cells, but offers no explanation for the cause.

Ross has claimed that by using some of the decomposition products of cells he could increase the activity of the leucocytes, as well as that of the fixed tissue cells. He has observed the greater rapidity of growth of cells in chronic ulcers when these regions are powdered with "globin" or its products of decomposition.

In the closer study of the chemistry and structure of cells, it has been amply proved that the nucleus of the cell is the dominant structure, and that the initial activity for work is developed in this structure. It is through the vegetative activity of the nucleus that cells are caused to multiply. It may be even more, the chemical syntheses of cell metabolism, as Adami has pointed out, are probably entirely dominated by the nucleus. If this be true, then the condition which we commonly refer to as the selective action of the tissues, is a property of the nucleus. If the nucleus, by nature of its metabolic activity, has the property of being selective in its chemical reactions, and if it is on account of the adaptability of the nucleus that the tissues may accommodate themselves to varying conditions in the fluids which nourish the cell, then, too, disturbances which are effected within the cell structure will be first and most marked in the nuclear material. Our micro-chemical methods are quite inadequate to give any suggestion of the early action of deleterious influences which have the effect of altering the chemical architecture of the nucleus. It is only in the later stages, when a tissue has taken on, or at least has given evidence of, what we have come to recognize as true malignancy, that we observe an atypical structure in the nucleus. Von Hansemann has shown that the cells of human cancer are subject to a diminution in the number of chromatin filaments in the mitotic figures. Later, Farmer, Moore, and Walker observed an analogy between the mitoses of the reproductive cells and those of cancer cells. They believed that a fusion of an epithelial cell with another, possibly a leucocyte, would produce hybrid daughter cells with atypical neoplastic qualities. Bashford and Murray have also studied atypical nuclear divisions. They do not agree with Farmer, Moore, and Walker, but believe that the irregular numbers of chromosomes, sometimes more, at other times less, than the numbers of chromosomes in somatic cells, result from abnormalities in the splitting of the filaments or in the unequal attraction or faulty position of the centrosomes.

These observations indicate that when certain influences are present, or it may be are removed, the vegetative activity of the nucleus is exaggerated; and that one of the objective signs is the atypical arrangement of the chromosome filaments. It is a not infrequent observation to find one or more nuclear figures in gland cells in the neighbourhood of inflammatory reactions. The majority of the cells divide by typical karyokinesis. However, the atypical variety—at least atypical from the viewpoint of the size, shape, arrangement, and number of chromosomes—is also met with in inflammatory processes. Some of these examples of atypical "figures" are, we must admit, possible artefacts; there remain, however, some which have the semblance of true atypical mitoses. The point which is of direct interest is that we have in the reaction of tissues to certain irritants, alterations in the structure of cells which simulate closely those changes observed in malignancy.

Some observers have indicated that the direction of the mitoses of epithelial cells differs in malignant neoplasms from those occurring normally or in benign processes. Under normal conditions the growing cells standing upon a basement membrane are found to have the mitotic figures placed at right angles to the layer, while in malignant new growths this arrangement is not preserved. We have, however, repeatedly observed that the lack of regularity in the division of the nuclei is not confined to cancers, but may also be found in benign growths and in inflammatory states.

Of recent years we have had a closer study of known irritants which bring about atypical tissue proliferation. Workmen engaged in aniline industries have not infrequently kidney diseases and bladder irritation. The latter condition varies from a slight superficial inflammation to actual proliferative vegetations upon the bladder mucosa. A chronic cystitis precedes tumour development. Among those who have been engaged in this work over extended periods—ten years or more—the presence of papillary tumours is not uncommon, and the literature contains reports of some forty-five cases. The early stages of papillary tumours of the bladder are notoriously difficult to diagnose as to their malignant qualities, but of these semi-experimental cases in aniline workers, over three-fourths of the total number of tumours were observed to possess malignant features.

Equally important are the reports of papillary tumours of the bladder developing in those infected by the bilharzia. Egypt gives us the greatest number of these cases. The accumulated evidence of the association of bilharzia disease with new growths of the bladder is undeniable, and similar to the type of tumour in aniline workers, the malignant tendency is great. Goebel, after a careful and extensive study of bilharzia neoplasms, concluded that about fifty per cent. were malignant.

Ferguson has further collected forty cases of primary, malignant disease of the bladder associated with bilharziosis. He has had an excellent opportunity of studying all grades of bilharzia infection. In several cases of bilharzia of the bladder, the surface epithelium was increased in thickness, and columns or cylinders of the epithelium, continuous with the surface, extended into the connective tissues in the region of the inflammatory reaction. Various grades of this proliferative change were to be observed according to the severity and length of time of the infection. Ferguson states that he has "no hesitation in affirming that cancer of the urinary bladder is the irritation cancer of Egypt." These new growths produce metastases.

Recently Wolbach has discussed tumours in their association with repeated injuries. Among the many instances of the clinical relation of tumour to injuries received, he reports from his own experience the development of cancer of the skin to *x*-ray burns. These neoplasms, he says, constitute the first experimental cancers. The results of his studies showed that the chief effects of *x*-ray exposures were upon the tissues of the skin, connective and smooth muscle tissue, and endothelium. There is a repeated destruction and repair of the tissues following the exposure, and finally obliterative changes develop in the blood vessels which lead to nutritional disturbances. Wolbach believes that these nutritional changes are important factors in the subsequent development of cancer, and that the direct action of the rays does not lead to the tumour growth. There appears to be a "latent period" of several years between the time when the individual received x-ray treatment and the time of development of the new growth. The constant and severe changes existing over this period, in the deeper tissues, have a marked effect upon the epidermis, and are probably responsible for the acquisition of the new properties on the part of the epithelium. The progressive character of the skin lesions, from the earliest hyperemia to a definite cancerous growth, indicates the close relation of tumour to repeated injuries.

Quite striking were the results of B. Fischer, who was able to induce atypical epithelial proliferation by the subcutaneous inoculation of Scharlach R. dissolved in olive oil. The proliferative reaction of the overlying epithelium, sending large columns of cells into the underlying corium, was interpreted by Fischer as an attraction, or attractive force, on the part of the Scharlach R. for epithelial tissue. This special attractive force he called attraxin. The connective tissues react by a process of an acute aseptic inflammation. The study of the epithelial reaction is interesting. Mitotic figures are seen, cells of irregular size and shape are present, and epithelial pearls are not infrequent. Depending upon the depth to which the fluid is injected, one obtains an extension of the proliferation into the deep tissues. At times the new growth forms quite a mass, projecting above the surface like a diffuse wart. Metastases have never developed from these experimental proliferative masses, and the newly developed tissues always regress and tend to assume the normal as soon as the foreign materials inoculated have been absorbed and have disappeared from the local site.

Borrel reports the frequent occurrence of cancer of the skin in association with chronic lesions caused by the demodex folliculorum.

Thus the majority of observations on the association of inflammatory states with subsequent malignant growth, have been made upon skin and mucosal surfaces, but evidence is not lacking that an equally important association may be observed in glandular organs. We are familiar with the reactions in the glandular tissues of the liver in cirrhoses, and it has also been pointed out that the adenomata and primary cancers of the liver are associated with fibroses of this organ.

From the practical standpoint, the changes occurring in glandular and other tissues, as the result of chronic irritation, or it may be even of conditions having some of the ear-marks of inflammation, lead to the greatest difficulty in recognizing the beginnings of cancerous processes. No longer can we trust naked eye appearance, and much less does the size of the mass give us any clue as to the invasive characters of the aberrant tissues.

I have been particularly interested in the histological characters of nodular masses present in the breast tissue, and in the similarity in the appearance of some truly inflammatory reactions to those which have been demonstrated in metastases to have malignant qualities. There would appear, when one arranges a series of such specimens, to be a direct transition, in histological appearance at least, from the one with simple inflammation to the other having malignant qualities.

The reactions occurring in the breast tissue under the influence of irritants are to be observed both as to the changes in the stroma and to the effects upon the glandular epithelium. Particularly are those reactions which are of a chronic nature more important in the study of the comparative changes in inflammation and cancer, than those processes which are of a more acute nature. In the acute conditions, the reactions take place in the supporting connective tissues, where either the destruction of this tissue along with its contained glandular elements takes place, or, if the reaction is less severe, the affected areas are flooded by the inflammatory exudate. During these processes of acute reaction there is usually some attempt on the part of the fixed connective tissues and their functional gland structures to react, either in an increase of their normal secreting function or in some attempt to increase the tissue mass by proliferation. It is, however, more commonly found that in such acute inflammatory disturbances, where the causative agent is not sufficiently severe to lead to tissue destruction, the reaction in the glandular structures is commonly that of increased function or exfoliation of the lining cells. On the other hand, the reaction in the connective tissues is usually more pronounced, at least in its microscopic character, depending upon the intensity of the irritant. Those which interest us the most, have but little tissue destruction, but the tissues, besides showing the presence of exudates, also exhibit an increased activity in the fixed tissues themselves. This proliferation is mainly in the fibroblasts, and to some extent in the endothelial cells.

As we pass from the acute to the more chronic types of inflammation, the changes in the connective tissue are evidenced mainly in the increase of a firm fibrous tissue with a greater or less infiltration of lymphocytes surrounding the vessels and gland structures.

It is more particularly in this type of inflammation that our interests centre, as in it the changes become more evident in the epithelial tissue. Whereas little evidence of active proliferation is seen in the stroma, the tissue being almost entirely composed of adult connective tissue cells, there is not infrequently a great reaction present in the gland structures. The study of such inflammatory reactions includes the study of that large group of cases variously described as chronic interstitial mastitis, fibrosis of breast and fibrocystic disease of the mamma. In all of these there is the one common condition, that of fibrosis. In some cases the fibrous tissue is localized in nodules, in others it pervades the breast diffusely. The breast itself is harder than usual, and may feel nodular, or it may have a single firm mass directly beneath the nipple. At times, also, the condition follows the direction of the lymphatics, so that two or more nodular masses arrange themselves in a row from the region of the nipple in the direction of the axilla.

Our knowledge of inflammatory processes suggests in these cases a preceding acute inflammation, although the history of such is not always obtainable. It is to be observed that the inflammatory processes to be noted in the stroma are, in their spread, closely associated with the lymphatics surrounding the gland structures. Thus it is found, that in the periphery of the diffuse inflammatory reaction the outer borders show the main reaction about the gland structures. Occasionally, too, in chronic forms of the disease the main inflammatory process is to be observed in similar areas, and all gradations between the acute inflammation and fibrosis is present about the gland structures in different parts of the breast.

While some of the fibroid processes of the breast are isolated to nodular masses involving the glandular part of the organ, other cases show a diffuse process, in which the greater part of the breast tissue becomes indurated. Not uncommonly these changes develop at a time when the breast becomes more adipose and pendulous, so that the fibrosis is associated with the deposition of heavy layers of fat.

The point of importance, however, is that the fibroid changes take place about the glands and their ducts, and by direct mechanical interference still further impede the functional activity of the glands. Whereas the activity of these glands for the most part ceases with the menopause, their structure is well maintained for some time. A certain amount of secretory activity continues all through life—a physiological necessity—for all tissues must functionate to maintain a healthy equilibrium. Adequate nutriment is supplied to the tissues equal to the requirements of their work. When, however, by an external process the functional work of these cells is interfered with, they have a potential excess of available energy.

Not only does the fibroid change lead to stasis of the mammary secretion along with the development of cysts, but the very condition which has induced the process of fibrosis has, simultaneously, had an effect upon the character of the epithelial tissues. The gland structures are still further altered by the change of their environment, the metamorphosis of a vascular stroma to one of less activity and poor in its nourishment. The development of sclerosis of the vessels is a not infrequent feature which may have a bearing similar to that observed by Wolbach in the skin.

The association of chronic interstitial mastitis with cysts has previously been commented upon by Schimmelbusch, Koenig, Roloff, and others, so that we need hardly touch upon it here. It was noted that the condition was usually bilateral, and commonly extended diffusely through the breast tissue. The interstitial proliferative changes in the connective tissues are primary. The epithelium lining the cysts, which is the epithelium of the gland tissues of the breast, does not show a uniform character in all cases. In some it remains only passive—simply acting as a lining layer to the cyst, and becoming more stretched as the cyst becomes more widely distended. In other instances, however, reactive changes occur, so that instead of remaining as a single layer of epithelium, proliferative changes develop which entirely alter the histological picture as well as disturb the relation of the epithelium to its underlying supporting stroma.

It is of interest to study these epithelial reactions more closely. Of these we find two distinct types which can be recognized only by the microscope. On the one hand, there are cases in which the lining membrane not only clothes the dilated cavities, but in which papillomatous outgrowths develop with typical finger-like processes. These papillomata project into the cyst and consist of an overgrowth of the structures of the entire cyst wall. The stroma projects from the submucosa and ramifies into many processes, each being typically lined by a single layer of cubical cells. It would appear that the cyst wall itself has been stimulated to overgrowth. The epithelial cells are nourished by the vascular loops which ascend in the stroma of the papilloma. The development of these aberrant structures may be compared with the development of papillomata on other epithelial lined membranes.

Quite different, however, is the structure of the second form of epithelial overgrowth. In it we observe the proliferation of epithelial cells alone. There is no supporting stroma, and although large masses of epithelial cells gradually fill in the lumen, there are no nourishing blood vessels which accompany the growth of the epithelial cells. The growth of the cells is more or less concentric and inward, but the core of the epithelial cells may extend in either direction along the lumen of the tube. The activity of the growing cells may be observed in the rather frequent mitoses.

In this second form of epithelial growth, then, we are dealing with a proliferation of the lining cells, in which a proper relation of the epithelial cells to the stroma is no longer maintained. The structure is atypical and proliferation is active. Moreover, there is no longer a single growing layer standing upon a basement membrane, but proliferating cells are found everywhere in the new mass. These conditions, particularly, give us difficulty in determining the presence or absence of malignant qualities.

Schimmelbusch concluded that all forms of such epithelial overgrowth must be classified among the neoplasms. He regards them as developing sui generis, and applies the name adenoma mammæ. He, however, overlooks the fact that the condition is preceded by a low grade inflammatory reaction and cyst formation, and that all the cysts do not react in this manner. Moreover, as we have pointed out above, epithelial tissues do react to irritants, and these reactions vary according to the stimulus present. One other form of fibrosis of the breast must not be overlooked. I refer to the apparently spontaneous fibrosis which is so prone to involve the glandular elements and yet does not appear to be associated with an inflammatory reaction. I would not say, however, that an irritant or stimulus in some form was not present.

If, now, for a moment, we turn our attention to the growth of cells in general, we may offer some grounds for suggesting the close resemblance of these cell masses, stimulated to activity by irritants and inflammation, with those of malignant new growths. Our conception of the requirements of cells for their passive existence, as well as for growth, has been clouded by the teaching that a certain relationship must exist between the growing tissue and the blood supply for adequate nourishment. What an adequate nourishment consists of has never been defined. Quite recently, however, through the work of Harrison, Carrel, and Burrows, and more recently of Weil of our laboratory, it has been shown that the tissues of warm blooded animals, including mammalia, may be nourished and grown on diverse media. Plasma, serum, Ringer's solution, and Locke's solution, all serve as suitable media in which almost every tissue of the body may be grown. Connective tissue, heart muscle, liver, kidney, spleen, and skin have each been grown in our laboratory. The question, then, of tissue growth presents itself in a new light. We no longer throw the shroud of mystery around the processes of the so-called spontaneous growth. We may view it as a proved fact that our body cells live and multiply with great ease and that the quality of the nourishment is not special for each tissue, as was once held. This statement is, however, only true in the consideration of the needs for the vegetative activity of the cells. For special functions of tissues special food is no doubt required.

Applying these considerations to the proliferative processes of the breast, it is evident that the factors for the growth of the epithelial cells are present. The initial stimulus or influence acting upon the cells is received during the inflammatory reaction, which occurs in the interstitial tissue. With the development of the cyst cavities, a type of fluid accumulates which is an adequate nourishment for the growth of cells. What difference there is in the type of stimulus—the one which induces papillomatous overgrowth with stroma, and the other in which the epithelial cells alone react in proliferation—we cannot say.

From a general study of tissue reaction, it would appear that the character of the tissue growth is dependent upon the nature of the stimulus, the change in the nourishment, and the state of the cells acted upon. How one irritant differs from another in its effect is difficult to say—but it also must be conceded that the same stimulus, under different conditions, has widely different effects. Dr. Haythorn, of our laboratory, has been able to show that subacute and chronic inflammatory processes may at times lead to metaplasia of the bronchial mucosa, and that in this process the stimulus acts upon the growing cells, so altering their characters that a histological metaplasia results. However, the changes in metaplasia are not alone confined to histological characters. The entire nature of the cells may become modified so that the vegetative qualities are also altered. This we believe happens in the proliferating cysts which we have described. Moreover, the degree to which this metaplasia may be carried is very variable, so that all proliferating epithelial masses differ from each other quantitatively in the changes produced. I use the word metaplasia in the broader sense, and do not confine its meaning or interpretation to that as defined by Virchow. In metaplasia I see not only a change in the form and appearance of a cell, but also consider changes in the internal architecture of the nucleus and cystoplasm, as well as an alteration in the physiological function of the cells. These latter aberrations may be great or small—and in fact cannot be accurately determined by present methods. Nevertheless, these slight metamorphoses have an important bearing upon cell relationship in the tissues where they occur.

It is obvious that all living matter is influenced by its environment. Our body cells are just as impressionable masses, to external influences, as are the more lowly organisms, particularly bacteria. New qualities may be acquired, and where once accepted are firmly impressed.

In the study of seventy-five cases of breast conditions of various kinds, I have been able to observe transitional changes from the simple, smooth lined cysts to those in which the epithelial proliferation indicated malignancy with metastasis. Although the distinct types of these processes which stand at either end of the series are clear cut and offer no difficulty as to the extent of their variations from the normal, I have found processes in which a conclusive diagnosis was impossible. Some of the instances of epithelial metaplasia, which may not at the time of examination indicate the crucial qualities of malignancy in metastasis, nevertheless possess features which we have learned to respect and to fear, lest in the future they should acquire this character. It may be that the forces acting upon the epithelial cells have carried the process of metaplasia to only a certain degree, and that these partly altered cells remain in a latent or semi-functional state until the advent of other new stimuli which bring about their complete metamorphosis. Latency of tissue in this sense is to be distinguished from the latency of the vitality or life of cells as has been discussed by Carrel.

Up to the present no one has been able to observe the beginning of a cancer. We have, however, had an opportunity of studying an unusually early cancer of the breast. The entire mass, which was only discovered by accident, was only half a centimetre in diameter, or about the size of a pea. Microscopically all the characters of malignancy were present, but there was no clinical verification of this diagnosis. However, this small mass showed evidence of destructive infiltration, the development of islands of proliferating epithelial cells with both typical and atypical mitoses. In a few places the proliferative changes did not differ from the type of epithelial proliferation which is found in cysts in which the stroma does not react. These latter areas, moreover, did not show evidence of a destructive invasion, and the basement membrane remained intact. It did appear that these areas were in the stage of transition in which the epithelial cells had acquired some new qualities, but were not completely metamorphosed. Moreover, many of the gland structures in this cancer were in a process of metaplasia—if we may so call it—in which several portions of normal glands were simultaneously taking on new characters. In other words, it did not appear that the growth had arisen from a single cell, but from a mass of cells which had been similarly influenced. Moreover, the incomplete changes which had occurred in the outlying parts of the growth did not differ in their appearance from epithelial changes observed in benign cysts of other breasts.

In this conception, then, the Cohnheim theory of embryonal cell rests is unnecessary in explaining some breast cancers. Further, a metaplasia of epithelial tissue, giving it malignant quantities, may occur *in situ* in gland structures without having a mechanical or vegetative displacement as suggested by Ribbert.

Cysts of the breast with reactive proliferative changes in the epithelial lining stand in an intermediate position between true inflammatory processes and cancer. Those cysts in which the epithelium alone shows vegetative activities have many features in common with true neoplasms, and must be viewed with grave suspicion.

Evidence, therefore, indicating a relationship between inflammation or irritative processes of tissues, to cancerous conditions, are not wanting either from clinical or microscopical sources. As we have then come to accept these observations and interpretations as facts, we must also be willing to appreciate the difficulties which must arise in those borderland conditions which, having obvious inflammatory or reactive changes, also have some of the characters of early malignancy.

At the present time in the practical crusade against cancer by the surgeon, the early diagnosis of the process is most important. Radical operation is still the important measure of success. It has come, therefore, that the former stereotyped points for clinical diagnosis of cancer are almost valueless in coming to a conclusion whether a tissue has benign or malignant qualities. The most satisfactory evidence, although not always conclusive, is gained by the examination of the tissue after removal, both by macroscopic and microscopic means. Nevertheless this technical procedure must be preceded by the collection of all possible clinical data. The differential diagnosis of any given case must rest in the hands of the clinician, who obtains additional information upon the case from all the allied departments of medicine. In the hope of early diagnosis, every means must be sought to give assistance in the better understanding of the disease process, for we have learned that our hopes in cancer are in the early removal, before the malignant character of the growth has become dominant in diverse parts of the body.

The surgeon has for years been insisting upon the sending of cases with malignant neoplasms to him early, and although much has been done in this direction, we have to-day reached a point where it is quite impossible to make an early diagnosis by clinical means alone. Small tumorous masses are often observed by the practitioner, but in this early stage even the keenest observer would hesitate to give a conclusive answer to the question of malignancy. Fischer-Defoy points out that out present attitude, gained by the experience of early operation on doubtful cases, is one of intense alertness, weighing in the impartial balance points gleaned in each case. The cases are frequently observed so early that cachexia, anæmia, and wasting may all be absent. Fever, ulceration, and chronic discharging sinuses, are only observed in the neglected conditions.

Thus, for the pathologist, too, the diagnosis of cancer has undergone much change. Not only has a new laboratory technique replaced the old, but the routine tumour tissue received by the laboratory is of quite a different character. The laboratory is approached by the clinician for the purpose of establishing a diagnosis, and not to verify the diagnosis. The masses of doubtful tissue are often small, the entire tumour not being over one or one and a half centimeters in diameter. With such small tissue masses, the microscopical examination of which is to determine the malignancy and prognosis, the microscopist is assuming great responsibilities, of which he is not forgetful.

SOME ACUTE ABDOMINAL EMERGENCIES

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I DO not think I need apologize for the selection of the subject which I am about to present for your consideration this evening, as it embraces some of the most serious of the problems with which we are confronted almost daily. It is true that many papers have been read and much discussion has taken place in regard to most of the conditions with which we are going to deal, and if, as a consequence of this, we had learned all that there is to learn, or if the last word had been said in this connexion, we might very well refrain from further pursuing the subject. But one is daily impressed with the fact that although much has been learned, the knowledge acquired has not become as widely disseminated throughout our profession as it should be, and although considerable improvement has taken place in the recognition and treatment of these cases, one unfortunately has to admit that many lives are still sacrificed through clinging to ancient prejudices. In spite of all the work that has recently been done, and the marvellous progress which has been made, we still have much to learn.

Let us consider the subject under the following headings:

1. Acute inflammatory conditions.
2. Perforation of gastric or intestinal ulcers, or of the gall bladder.
3. Acute intestinal obstruction.

There are a few conditions which are not covered by the above classification, such as a ruptured ectopic pregnancy, twisted ovarian pedicle, acute dilatation of the stomach, and traumatic lesions of the abdominal viscera, and these, if time permits, will be referred to separately.

1. The most serious and the most frequent of all acute abdominal emergencies are due to disease of the vermiform appendix. Acute inflammation of the appendix, attended with perforation or gangrene, and rapidly leading to diffuse septic peritonitis, is one of the gravest conditions with which we have to deal, placing the

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patient's life in instant jeopardy, and requiring for its relief immediate surgical intervention. The early administration of a purgative by the friends of the patient, or unfortunately in some instances by the family physician, is undoubtedly responsible for the serious consequences in many of these cases, for the rapid onset of perforation and diffuse peritonitis is without doubt accelerated by the injudicious use of a purgative. If a child complains of pain in the abdomen, the first thing the mother does is to give it a dose of castor oil or salts, and we cannot too strongly emphasize the dangers of such a practice.

As yet practically nothing is known as to the functions of the appendix, but it seems only reasonable to suppose that it performs some function, considering its vascular supply and the fact that it is so abundantly supplied with lymphoid tissue. That it is of no great value in the internal economy is clear from the fact that ablation of the appendix results in no apparent interference with digestion or with the normal health of the individual.

It may be of interest here to mention that solids are digested and absorbed by the small intestine, and fluids are taken up in the large intestine; in other words, we eat with our small intestine and drink with our large intestine, and it has been roughly computed that of the fluids taken by the mouth only 10 per cent. is absorbed before the cæcum is reached. It is known that fluid taken by the mouth speedily excites a wave of peristaltic activity in the lowest ileum.

Harvey Cushing, Gilbert, Domenici, and others have shown that bacteria are most numerous and active at the junction of the large and small intestine. Harvey Cushing has also demonstrated that starvation will render sterile all parts of the intestine which can be caused to empty. It has also been proved that aperients not only excite activity in the small and large intestines, but render secretion more abundant, and considerably increase bacterial virulence. This has been confirmed by the findings after typhlotomy.

I should now like to point out the bearing of these facts upon cases of appendicitis. The first symptom in an attack of acute appendicitis is always pain, and should pain not be the first symptom in an attack of acute abdominal illness one can practically exclude the appendix. The pain is sudden in onset, of a varying degree of severity, and is usually at first referred to the epigastrium, but in a few hours it becomes localized to the right iliac region. As a rule nausea or vomiting soon follows. In a few hours there will be slight elevation of temperature and increase in the pulse rate, with rigidity and tenderness over the appendix. If all food—both fluid and solid—is avoided, there will generally be abatement of the symptoms *if aperients are withheld.* Unfortunately in the majority of these cases the mother, wife, or nurse will have already administered a brisk purgative, the idea being that something which has been taken has disagreed with the patient, and must be got rid of. As a rule, within a few hours after the administration of a purgative the patient becomes worse, the pain more marked, and gradually the whole of the abdomen becomes rigid and tender, and the symptoms of acute, diffuse peritonitis are ushered in.

A large number of cases have come under my observation, in which I am practically certain that perforation of the appendix and diffuse peritonitis were due to the injudicious administration of purgatives. A very common history in such cases is that a few hours before the onset of the pain the patient partook of a hearty meal, or ate something which was supposed to have disagreed with him, and—acting upon this assumption—a brisk purgative was given. A few hours later, instead of the expected relief, the pain has increased in severity, and when seen there is abdominal rigidity, either limited to the region of the appendix or involving a wider area.

In an acute appendicitis, even though perforation ensues, if purgatives are not given, and absolute starvation is enforced, diffuse peritonitis does not as a rule supervene, but a localized abscess will usually develop. This fact affords the best indication for treatment; namely, that at the onset of an acute attack of appendicitis all food by the mouth should be withheld, with the object of arresting peristaltic activity in the intestine and reducing the virulence of the bacteria within the bowel, and in addition to this it is of course absolutely essential that no purgative be given. Even the administration of fluids, which must reach the cæcum to be absorbed, should be avoided. As the giving of aperients has been shown to increase the virulence of the bacteria within the cæcum, it will be quite obvious how important it is to withhold them when the appendix, which opens into the cæcum, is inflamed. In practically every case of diffuse peritonitis, due to a perforated appendix, upon which I have been called to operate, there has been a history of a purgative, and often of repeated doses of purgatives, having been given, owing to difficulty in getting the bowels to act, thus actively assisting in the diffusion of virulent microörganisms, and speedily producing generalized peritonitis.

In spite of the undoubted advantages of the so-called starvation treatment of appendicitis, I am more strongly of the opinion than ever that early or immediate operation is altogether the safest and best procedure. There can be no doubt whatever that the only curative treatment is surgical; that operation should be performed immediately the diagnosis is made, and that the appendix should be removed if possible. In cases of diffuse peritonitis my own practice is to invariably remove the appendix. In cases of localized suppuration I am not generally satisfied with opening the abscess, but almost always remove the appendix also, and I have never had any reason to regret this procedure. In this connexion it should be borne in mind that the initial symptom, namely, acute pain, does not indicate the onset of appendicitis, but of its resulting peritonitis. If a purgative has been given in a case of acute appendicitis this fact should furnish an urgent reason for advising immediate operation. This is even more imperative in a child than in an adult, for *all cases* of acute appendicitis in children should be treated surgically. It might be mentioned that appendicitis is undoubtedly the most common condition in children requiring operative treatment. The symptoms present in adults are often lacking in children, for in many cases in children I have found the abdomen filled with pus at operation and a gangrenous appendix, when prior to operation the abdomen, although tender, was soft and without rigidity. A rectal examination should be carried out as a routine procedure in every case of acute abdominal disease in a child, as in this way it is possible to explore a considerable portion of the peritoneal cavity. In deciding for or against operation, it should be remembered that sudden cessation of pain after a typical onset is by no means uncommon. In such cases operation should be accelerated rather than delayed, as relief of pain may be due to sudden rupture of the distended appendix or the supervention of gangrene.

Unfortunately, it is the prevailing custom for the mother or nurse to give a purgative when a child complains of abdominal pain, and an educational campaign should be energetically undertaken to stop this very dangerous practice. Many of the so-called "bilious attacks" occurring in children, accompanied by colicky pain, vomiting, and slight fever, are undoubtedly mild attacks of inflammation of the appendix. I am not contending that all stomach-aches in children owe their origin to the appendix, but there is no doubt whatever that that organ is responsible for a considerable proportion of them. The best treatment, apart from operation, or until operation can be undertaken, is the so-called starvation treatment, with the patient in the Fowler position, and the application of an ice-bag over the appendix, together with the withholding of purgatives and rectal alimentation.

One of the most important symptoms of perforation of the appendix is the presence of marked abdominal rigidity, which is nature's method of splinting and protecting the inflamed part. In a case of perforation the pulse-rate is never rapid to begin with, but often for some hours remains under ninety, and then gradually increases. In these cases of diffuse peritonitis the pinched and anxious expression of the face is of the greatest value in diagnosis.

The following cases show the disastrous results of the use of purgatives.

Mrs. M., aged forty-nine, was seen on January 5th, 1911. She was taken ill with pain in the abdomen, which was thought to be due to some irritant in the intestine, and free purgation was ordered by her physician. Instead of the expected relief, her pain continued, and the abdomen became hard and distended. Poultices were applied for two or three days, and then an attempt was made to get further movement of the bowels by purgatives. After using them freely, together with enemata, and obtaining no relief, a diagnosis of intestinal obstruction was made, and I was called in to operate. It was quite clearly a case of diffuse peritonitis, originating in the appendix. The patient was very ill, with an enormously distended abdomen of board-like hardness, a weak pulse, and some vomiting, a condition which did not promise much advantage from operation. However, an incision was made and pus let out, a gangrenous appendix removed and drainage provided. The obstruction persisted, however, and she died two days later.

M., a boy aged twelve, was given purgatives freely at the beginning of an attack of appendicitis. When I saw him two days later he had a pinched and anxious expression, with general abdominal pain and tenderness, but without rigidity. Operation revealed a perforated appendix, with diffuse peritonitis. The patient recovered.

I have no doubt that in this case the perforation and diffuse peritonitis were due to the purgation, and it further illustrates a condition that one frequently finds in children, namely, the absence of rigidity in diffuse peritonitis.

2. Acute Diverticulitis. Acute diverticulitis is a possible abdominal emergency which will very closely simulate appendicitis, as is shown by the following case:

M. O., aged sixty, was seen by me on October 3rd, 1910, in consultation with Dr. G. W. Ross. He had practically all the symptoms of acute appendicitis with perforation, with the exception that the pain and tenderness were situated on the left side instead of the right. He had been ailing about ten days when I saw him, and there was now a large mass in the left iliac region, extending over as far as the middle line, with general abdominal rigidity and tenderness. On making an incision, general peritonitis was found, due to rupture of an abscess on the left side, and drainage was provided. He died thirty-six hours later, and the post mortem examination showed that he was suffering from acute diverticulitis of the sigmoid. Seventeen pouch-like projections were observed bulging into the meso-colon, and measuring from two to five millimetres in diameter and one centimetre in depth. Their walls were thin, and contained no muscle. Several of them contained hard fæcal concretions. One of them had perforated, and communicated with the cavity of the abscess which it had caused. On microscopical section through the diverticuli, the walls were seen to be composed of the mucosa, submucosa, and serosa.

3. PERFORATION OF ULCER OF STOMACH OR DUODENUM. The abdominal catastrophe next in order of frequency to appendicitis is that due to perforation of the stomach or duodenum. Two types of ulcer are met with, the acute and the chronic, but it is usually perforation of a chronic ulcer with which one has to deal. This being so, the calamity could be avoided by having recourse to operation in all cases of chronic ulcer. The view is now quite generally held that in chronic ulcer surgical treatment is invariably necessary, and there is a reasonable hope that with improved methods of diagnosis the catastrophe of perforation may be entirely avoided. When a patient who has suffered from recurrent attacks of indigestion suffers more acutely in one than in any previous attack it is an indication of the imminence of perforation. In addition to the risk of perforation there is a further reason for advising operation in these cases, namely, that 80 per cent. of cases of cancer of the stomach have been shown to originate in chronic ulcer. The pain of perforation of an ulcer of the stomach or duodenum is of the most agonizing character. I should like here to briefly report a typical case of this kind.

Mr. H. B. W., aged fifty, seen January 30th, 1909, was suddenly taken ill at midnight with severe agonizing pain below the right costal margin. His family physician found him writhing in pain and in a profuse perspiration. From the intensity of the pain a diagnosis of gall-stone colic was made, and morphia administered. In spite of the application of hot fomentations and repeated injections of morphia, until one and one-half grains had been given during the night, but slight relief was obtained. When I saw him at ten o'clock the next morning he was propped up in bed, and had a pinched, anxious, and terrified expression. He was perspiring freely; his breathing, which was short and quick, was entirely thoracic, and he was suffering intensely. He was vomiting almost incessantly. The muscles were tense and rigid, and he held himself stiffly in a fixed position, being afraid to make the slightest movement, and scarcely daring even to breathe, lest the severity of the already intolerable pain should thereby be increased. His pulse was 92, and his temperature 99° F. A diagnosis of perforation of the stomach or duodenum was made, and immediate operation advised.

He was removed to the hospital and operated upon within two hours, when a perforated duodenal ulcer, close to the pyloric end of the stomach, was found, and closed by Lembert sutures. There was already some peritonitis, and drainage was provided. He made a good recovery from the operation, and everything was going on most favourably when, at the end of three weeks, he complained of pain in the region of the liver, and a few days later it was clear that he had developed a subphrenic abscess. This was opened and drained, and he was recovering nicely when he suddenly died about a week later from pulmonary embolism.

I wish here to further emphasize the character of the pain, which is the most agonizing of any pain with which I am acquainted. Another important feature is the attitude of the patient, who remains rigidly fixed in one position, being afraid to move even to the slightest extent. This is in striking contrast with the state of things observed in hepatic colic, in which the patient is often restless, and moves about continually in the attempt to obtain relief. Muscular rigidity is also more board-like and intense in perforation than in hepatic colic. In the former condition the local tenderness at the beginning is a very reliable guide to the site of the perforation. On account of there being scarcely any alteration in the frequency or volume of the pulse, the diagnosis of this serious condition is sometimes not made, so that I wish here to lay stress on the fact that you may have, and frequently do have, an unaltered pulse-rate at the onset and for some hours after perforation of the stomach or duodenum. A little later on the pulse-rate will, of course, increase in frequency and diminish in volume with the supervention of peritonitis. It is scarcely necessary to say how important it is to diagnose perforation soon after it has taken place instead of waiting until peritonitis develops, as operation offers a percentage of recoveries in direct ratio to the time elapsing between perforation and operation.

I will here give a brief account of a case of perforation of the stomach resulting in a localized abscess.

Mr. E., aged fifty, operated on April 6th, 1909. He had been ill in the country for about two weeks, but no definite diagnosis was made. When I saw him a mass could be felt in the epigastric region, very tender to the touch, and with a tympanitic note over it. He gave a history of having had severe attacks of gastric pain, lasting from half an hour to several hours, and extending over a period of ten years. He had a temperature of 101°, the pulse rate being 50. It was quite clearly a local abscess, and we thought it likely to be due to perforated ulcer of the stomach. It was opened into, and about an ounce of pus evacuated. A perforation was found on the anterior wall of the stomach, extending up to the lesser curvature, large enough to allow of the passage of the index finger. The walls of the stomach around the perforation were greatly thickened. The perforation was closed by Lembert sutures and drainage provided. He made a good recovery.

Mr. R., Aurora, aged fifty-four, seen with Dr. Richardson on March 1st, 1909. He stated that the usual agonizing pain had come on twenty-four hours previously. A perforation was found in the anterior wall of the stomach, about two inches from the cardiac end, midway between the curvatures. It was closed and drainage provided. For the first twelve days he got on nicely, but then developed pleurisy, which was followed by empyema. A very small opening was made between the ribs, and a drainage tube inserted by his physician, which evidently was insufficient to provide good drainage. Later on a large mass developed in the upper abdomen, and perforated, flooding the abdomen with pus, and causing death. I have no doubt that in this case the empyema opened through behind the diaphragm into the general peritoneal cavity.

I might here refer to a couple of interesting cases of typhoid perforation.

The first case, G. S., aged twenty-nine, whom I saw with Dr. Rogers, of Ingersoll, was operated upon on October 17th, 1901, twenty-two hours after perforation, when a perforation was found about two inches from the cæcum. He was in the third week of typhoid. The perforation was closed by Lembert sutures. He made a nice recovery from the operation, but about a month later

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Although some of these cases recover without operation, early operation is the safest course. Even though operation may not save the life of the patient it will relieve the agonizing pain, and thus considerably add to his comfort. More or less extensive fat necrosis is usually found in an enlarged pancreas and its vicinity, and an effusion of blood in the peritoneal cavity. Two cases of enormous fat necrosis involving the omentum have come under my own observation. If the condition is in an early stage the effusion of blood may be slight and fat necrosis may be absent. The treatment consists in opening and draining the gall-bladder, and passing tubes down to the pancreas for drainage.

Crises in Cholelithiasis. The crises developing in the course of cholelithiasis are very rare. I have met with a few cases of perforation of the gall-bladder which resembled very closely attacks of acute appendicitis, with the exception that the pain was situated higher up. As I have previously stated, one distinguishing feature between the pain of colic and that due to perforation of a hollow viscus is the ceaseless agitation and restlessness associated with the former. A patient suffering from colic—hepatic or renal—will toss about in ceaseless efforts to obtain relief, whilst one suffering from perforation holds himself rigid and motionless. In hepatic colic the rigidity of the abdomen affects only the immediate vicinity of the gall-bladder, all other parts being soft and free from tenderness.

Gangrene of the Gall-Bladder. As a rule there is a definite history of biliary trouble. The symptoms resemble those of an acute peritonitis below the ninth rib, and consist of pain and rigidity, probably associated with an initial rise of temperature, or even a rigor, the temperature subsequently tending to fall. Immediate operation is the only treatment. Delay results in danger to life from infective peritonitis, or extension of inflammation to the portal and hepatic veins and the inferior vena cava, and by way of the hepatic ducts to the liver. The treatment consists in removal of the stones and gall-bladder, and packing with gauze.

Acute Intestinal Obstruction. The most common cause of primary intestinal obstruction is a strangulated external or internal hernia. Other causes, in order of frequency, are intussusception, impacted gall-stones, and volvulus. In some cases it develops on a chronic condition, such as cancerous stricture of the large intestine. In all forms of intestinal obstruction the pain is sudden in onset and progressive in severity. It is diffused over the whole abdomen, paroxysmal, and frequently associated with reflex vomiting, which increases in frequency, and in a few hours, or possibly in one or two days, becomes typical in character, the material vomited varying from bile-stained mucus to brownish fluid with a fæcal odour. The temperature is at first normal, but gradually becomes subnormal, and remains so until peritonitis develops.

INTUSSUSCEPTION. Intussusception is the only form of intestinal obstruction that is common in children. The majority of cases occur in children under twelve months of age, and a large proportion in children less than six months old, especially those who are weak and badly nourished. These cases are characterized by the sudden onset of paroxysmal pain, recurring at intervals of a few minutes, sudden collapse, and a few hours later discharge of blood and mucus from the anus. Vomiting sometimes occurs at this stage, but is not constant. Obstructive vomiting sets in later. The most characteristic sign is obtained by palpation of the abdomen. A sausage-shaped and movable tumour is felt, which hardens at the onset of each paroxysm of pain, and softens in the intervals between the paroxysms. Operation is the only treatment, and the prognosis is good, provided the operation can be undertaken within a few hours of the onset of the symptoms. The reason for the bad results so frequently obtained by operation in intussusception is that the operation is undertaken late, after other plans of treatment have been exhausted. I wish particularly to emphasize the fact that the *only treatment* in an acute intussusception in children is immediate operation.

MALIGNANT STRICTURE OF THE COLON. In malignant stricture of the colon there is a gradual onset, with marked abdominal distension and abnormally strong peristalsis. There may be attacks of diarrhœa, with prolonged intervals of absolute constipation, whilst the general condition may remain practically normal for some considerable time. While this is generally not an acute emergency, yet it happened to be so in a case of mine, a brief account of which I will give you.

I was asked to operate upon a man who was hurried to the hospital suffering from symptoms of shock and acute abdominal pain. He was fifty years of age, and had been working until one week previously. Since that time he had had almost complete obstruction, with occasional attacks of abdominal pain, and had been taking purgatives without result. His abdomen was greatly distended and very tender and rigid all over. On opening the abdomen the cæcum was found to be enormously distended, being as large as a baby's head, and it was perforated in three places, a considerable quantity of fæcal matter having escaped into the peritoneal cavity. A small annular stricture was found in the sigmoid, not more than a quarter of an inch in vertical extent, but completely closing the lumen of the gut.

Volvulus. This condition is met with after middle life in people who have suffered from chronic constipation. In some cases the cæcum is involved, but most frequently the sigmoid flexure. Abdominal meteorism is a characteristic feature, but vomiting does not occur until a late stage. The diagnosis of intestinal obstruction is made from the intermittent and paroxysmal character of the pain, the progressive vomiting, the complete obstruction to the passage of fæces and flatus, and the absence of pyrexia and muscular rigidity. Failure to obtain a movement in twenty-four hours, in spite of the administration of repeated enemata, suffices to establish the diagnosis and to indicate urgent operation. The general adoption of this rule would undoubtedly result in saving many lives and in greatly improving the operative results in obstruction. In those cases of intestinal obstruction associated with acute infective peritonitis, immediate operation is only contra-indicated if death is imminent, and rapid operation and suitable after-treatment have sometimes led to marvellous recoveries in apparently hopeless cases.

Acute Dilatation of the Stomach. This is a rare condition of obscure origin, and may follow abdominal operations. The symptoms consist of abundant fluid vomiting, epigastric pain and distension, subsequently diffused over the abdomen, irregularity of the bowels, and severe collapse. At a later stage vomiting may cease, owing to complete atony of the stomach. The most valuable physical sign is succussion. As regards the diagnosis, the extrem abdominal distension may lead to confusion with diffuse periton or intestinal obstruction may be diagnosed if constipation is pr Many of these cases will recover, but unless relieved by evac of the contents of the stomach the condition is rapidly fatal. I a recent case, following a hysterectomy, which responded to trea ment in a marvellous manner.

Hæmorrhage from the Stomach. Surgeons are unanimous in the opinion that surgical intervention is sometimes absolutely necessary in cases of hæmorrhage from gastric or duodenal ulcers, and that in some of these it is the only means of saving life. Sometimes the primary cause of the hæmorrhage can be discovered and dealt with, but in other instances it is possible only to relieve the distension by performing a gastro-enterostomy. In dealing with such cases it should be borne in mind that the hæmatemesis may be of hysterical origin, and that the gastric hæmorrhage sometimes merely represents vicarious menstruation. I may here refer to two cases.

Miss S., aged twenty-three, seen in consultation with Dr. Yellowlees and Dr. Caven a few months ago. She had had three very severe hæmorrhages from the stomach within twenty-four hours, which resulted in profound anæmia and a rapid, weak pulse. Every kind of medical treatment had been tried in attempting to arrest the hæmorrhage, but without avail. On opening the abdomen, there was no external evidence of ulcer of the stomach, so the stomach was opened, when a small ulcer was found on the posterior wall, near the lesser curvature. This was sewn over with chromic gut, and the opening in the stomach closed. She had no further hæmorrhage, and made a very rapid recovery.

Mrs. H., aged twenty-five, had repeated hæmorrhages from a duodenal ulcer. She became blanched and had a rapid pulse, and it was feared death was imminent unless the hæmorrhage could be stopped by operation. The patient was so weak, with a very small pulse of 140 and a subnormal temperature, that we felt we were accepting a grave responsibility in undertaking an operation under the circumstances. However, as we thought it offered the best chance, the abdomen was opened under ether anæsthesia, and as no indication of an ulcer could be seen in the duodenum a posterior gastro-enterostomy was done, followed by a good recovery.

RUPTURED ECTOPIC PREGNANCY. There is another abdominal emergency in addition to acute hæmorrhagic pancreatitis in which there is profound collapse, namely, an ectopic pregnancy, but there should be no difficulty in distinguishing between these two conditions. In the latter condition the characteristic symptoms consist in the sudden onset of pain in an apparently healthy woman, succeeded by collapse, with soft abdominal walls and a rapid pulse. If in addition to these signs a doughy swelling can be felt in Douglas's pouch, and there is a history of the slightest irregularity in the last one, two, or three menstrual periods, a diagnosis of ruptured ectopic pregnancy would be justified, and immediate operation should be undertaken. One feature of this condition is that there is never abdominal rigidity to any extent.

I should like to give a brief account of an interesting case of ectopic gestation, followed by intestinal obstruction.

Mrs. R., Montreal, aged twenty-seven, operated on December

14th, 1908. She stated that two weeks previously she was suddenly taken ill with very severe abdominal pain and faintness, and since that time she had had pain off and on. Her last period was two weeks over-due, and came on a few days after the pain referred to, and since then there had been a bloody discharge, containing shreds. On vaginal examination a tense swelling was felt behind the uterus. Ectopic gestation was diagnosed, and at operation a large quantity of blood, containing dark blood clots, many of which were adherent to the intestine, was found in the peritoneal cavity. The right tube, enlarged with a pregnancy of about six weeks, was lying behind the uterus, and bleeding from the fimbriated end. It was removed. The blood clots were washed out, and the abdomen was closed.

She did nicely for twenty-four hours. Soon after this she began to complain of abdominal pain, which was followed by distension. Her pulse soon increased in frequency, and vomiting set in. Enemata were given and other treatment instituted without effect. She steadily became worse, until twelve hours later she had a pinched and anxious expression, with a greatly distended abdomen, and a pulse of 128. We decided to re-open the wound, and when this was done the intestine was found enormously distended, and as there was no evidence of peritonitis or mechanical obstruction it was clearly a case of intestinal paresis. The transverse colon was punctured, and a large quantity of gas and fæcal matter removed, the small opening being closed with Lembert sutures.

The patient was considerably relieved, vomiting ceased, and the general condition improved, but thirty-six hours later she again complained of abdominal pain, which was soon followed by vomiting. A definite peristaltic wave could be made out starting in the right iliac region, and passing across the abdomen in the region of the spleen. A large number of enemata were given without effect. The symptoms increased in severity until it was quite clear that she was suffering from mechanical obstruction, and her abdomen was again opened under gas and ether. As soon as the peritoneum was opened, the first piece of distended bowel which presented through the wound was punctured and a considerable quantity of gas let out, as the distension was too great to permit of exploration. A volvulus of the small intestine was then found, involving about eight feet, which had passed up over the transverse colon and omentum, and occupied a position in the region of the spleen, in this way causing pressure upon the colon and obstructing it; so that we really had an obstruction of the large intestine from pressure. Immediately after replacing the small intestine a large quantity of gas and fæcal matter passed down through the colon and out at the anus, causing her to have a huge movement on the table. Though considerably shocked from the operation she rapidly improved, and made an uninterrupted recovery.

CONCLUSIONS

1. The sudden onset of acute abdominal pain, with rigidity of the abdominal muscles, or even without rigidity, but with tenderness on pressure, indicates the presence of an acute lesion, and calls for immediate surgical intervention.

2. It will be clear from what has been said that these acute emergencies are dependent upon pre-existing disease, and therefore should be preventable by an early diagnosis and suitable treatment.

3. The careful consideration of the early symptoms, and observation of the site of greatest tenderness and rigidity, are most important in making the diagnosis.

4. Shock is not of necessity associated with perforation, as the condition of the pulse may remain practically normal for some hours after its occurrence.

5. In all cases of abdominal pain it is imperative that *purgatives should not be given.* This is especially important in children.

DISINFECTION IN AND AFTER INFECTIOUS DISEASES

By W. T. Connell, M.D., Kingston

THIS paper concerns itself only with the value of such disinfectant measures as are applicable to infected material at or after leaving the bodies of those infected. Disinfection of this character is of no value to the patient, except, perhaps, in some subacute or chronic infections where re-infection is possible, but is for the purpose of protecting the attendants, the family, and the public against the transference of such infected material to them.

Necessarily then in dealing with any infectious disease it is essential to have definite knowledge of the avenues through which the infective agents may leave the body, their longevity outside the body under the various conditions met with, and also their portals of entry in leading to infection of others. Given such knowledge in any infectious disease, the place and value of disinfection for that disease can then readily be assigned. Thus, in such diseases as malaria and yellow fever, which are transferred by mosquitoes, disinfectant measures directed against the excreta, clothing, and other fomites have no place, but are useful only when directed against the insect carrier itself. Disinfection as we ordinarily understand the term finds its chief value in those cases in which the body excretions or certain of them contain the infective material and are the means through which the disease is transmitted to others. We must clearly recognize, however, that pathogenic bacteria do not increase in numbers outside the body, though to this there are a few exceptions, such as the occasional growth of typhoid bacilli in milk. On the contrary we find that such bacteria nearly always find conditions of life outside the body adverse, so that the tendency is for such bacteria to die out, the rapidity with which destruction occurs depending on the bacterium, its numbers, and the conditions to which exposed. Under ordinary house conditions death occurs quite rapidly in the case of such microbes as those of diphtheria, scarlet fever, measles, and even those of tuberculosis. Hence the longer such bacteria are removed from the body, the fewer are left to institute an infection even if virulence be retained, but this also ems to suffer through lapse of time. Thus the danger from such aterial becomes less, until in a comparatively short time it becomes il, so that houses do not long remain danger points once we remove fected individuals therefrom. We cannot too strongly emphasize e point that infected individuals or articles recently infected by em, are the agents which transmit infection in nearly all our fectious diseases, including those above mentioned and also yphoid fever and even small-pox. True, a very small percentage f cases may become infected from old fomites through longevity f a virus, and I think all who are engaged in medical practice and specially in its sanitary aspect could find instances, but they are ew in number as compared with cases due to exposure to more ecent material or due to direct propagation.

I think we have, too, been laying quite too much stress in the ast on aerial transmission of disease. Such transmission, with the ossible exception of small-pox, does not occur except in the very mmediate neighbourhood of such patients as, for example, diph-heritic ones, who in coughing, sneezing, or sputtering throw out nfected droplets into the air about them, which may be inhaled efore they have fallen. Tangible or direct means of carriage ccount for the vast majority of infections, and aerial transmission an largely be ruled out of court. Such tangible contact with the ick is often not traceable, but we must remember that besides the ecognized sick, as, for example, those suffering from such diseases s typhoid fever, diphtheria, and even scarlet fever, there is a fair ercentage of unrecognized or missed cases, cases which may not ollow the usual clinical types or be so mild as not to be seen by a hysician. Or again, in the case of typhoid we have to consider s well the probable presence of healthy carriers. If recognized ases are cared for, it is to these missed or unrecognized cases of ickness, to convalescents or healthy carriers, that we must assign he largest share in the spread of disease, and not to infection of ooms and clothing.

Keeping these conditions in mind we can understand how disease ay spread despite isolation and disinfection of recognized cases. t is the duty of every physician to direct, in every case of infectious isease, that the infectious excretions be properly disinfected so s to limit the amount of possible infective material. The time to mploy disinfectant measures is just as soon as possible after removal f the same from the body.

In disinfection by chemicals or by heat it is very necessary to mphasize to the nurse or attendant that the material to be destroyed must be brought into contact with the chemical and that time is required for the latter to act; e.g., throwing a disinfectant solution over a typhoid stool and then depositing this in a privy is a waste of disinfectant, and entirely valueless as a sanitary measure. Yet this is the form of stool disinfection I have actually heard advised by several physicians, and certainly is the method which quite 25 per cent. of our physicians permit the attendants to carry out. A proper strength of the disinfectant solution, a thorough admixture, and sufficient time for the destructive action of the solution, are points in disinfection which must be insisted on. Next to the excretions themselves, soiled clothing and bedding harbour infective matter, and these should be cared for as carefully as the excretions. The hands of the sick, the hands and clothing of attendants, or other contacts, stand next in order as possible means of transmission not to be neglected. Disinfectants are not as much required here as are ordinary measures of cleanliness.

Have there been any practical applications of the doctrine that aerial transmission of disease is rare, except in the very immediate vicinity of certain types of infectious disease, and that other more tangible means of contact or carriage,—by bodily contact, fingers, food or water, flies, etc.—must be the chief means by which transmission occurs? I can only point to the practice of certain hospitals where a case of infectious disease develops in the wards, or the practice in certain isolation hospitals where at times a child entering with one disease will be in the period of incubation of another which develops in due course, e.g., measles or diphtheria in scarlet fever. The practice in the Monsall Fever Hospital, Manchester, is an excellent illustration. If, for example, in the scarlet fever ward, diphtheria appears, the patient's bed is surrounded by tapes simply to emphasize to the nurses or attendants that certain special precautions are to be taken. Thus, all food vessels, medicine bottles, and appliances necessary for the patient are to be used solely by this patient. The nurse must put on a special cover over her dress, wear rubber gloves, and take care to disinfect carefully all swabs and sputum. She must also look carefully after the bedding and clothing of this patient. Before waiting on other patients, she must remove the special cover and gloves. No cases of infection have been transferred to others in the ward since this method has been adopted,—a proof, if any were needed, of the absence of danger from aerial transmission for distances greater than a few feet and that, if there is no tangible means of carriage, infection will not occur. It strongly emphasizes, too, the fact that infection is personal, or as

Comby puts it, "Persons, not things, are the carriers and transmitters of infection."

Now what shall we do after cases of infectious disease are removed from their rooms? Of what value are disinfectant measures then? The answer depends very largely on the previous care of the patient. If care has been exercised with infected excretions, etc., all that needs to be done in such a case, whether it be measles, scarlet fever, diphtheria, or tuberculosis, is to remove and disinfect all washable bedding and clothing, hang out in the air and sunlight for some hours or days unwashable clothing, and give the room a thorough cleaning and aeration. Gaseous disinfection will do no good and is an unnecessary expense.

If, however, the patient has not been well cared for and the room is not in good condition, the gaseous disinfection can be made a preliminary to the removal and direct disinfection of clothing and bedding and the cleansing of the room. Gaseous disinfection, at best, is but a surface disinfectant and, as ordinarily carried out, is valueless, except that it requires thorough aeration afterwards to make the rooms livable, and again acts as a means of getting other more necessary things done afterwards, particularly a thorough cleansing. Chapin, in an address on terminal disinfection before the American Public Health Association September, 1910, pointed out very clearly and emphatically the valuelessness of such measures from a public health standpoint, their great expense and the greater need there was for adequate disinfection during the disease and for recognition of mild cases; and with him, after twelve years' experience, I fully agree.

THE PRESENT STATUS OF THE WASSERMANN REACTION

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PROBABLY no one of the four centuries since syphilis has scourged humanity has shown such wonderful advances in the diagnosis and therapy of that dread malady as the first decade of the twentieth. Among those who have made the decade notable for its advances, Wassermann takes no mean place, as the discoverer of the serological reaction which bears his name.

The phenomenon of complement fixation, which he has applied to the diagnosis of syphilis, was originally demonstrated by Bordet and Gengou in 1901. Just as Wassermann was indebted to others for the method, so the reaction which now almost universally bears his name owes most of its success to his imitators and successors; for the original reaction of Wassermann, Neisser, and Bruck of 1906 bears but slight resemblance to that generally practised now, either in its technical details or in its practical achievements.

The original research of Wassermann used as antigen an extract of organs rich in syphilitic virus, and denied the possibility of obtaining a successful reaction with extracts of normal organs. The specificity of the reaction depended upon the correctness of that hypothesis. It was very soon revealed that the reactions could be as easily obtained with alcoholic extracts made from normal organs, where there was not the slightest suspicion of a syphilitic taint. The conclusion was immediately drawn that the reaction was not specific, and this belief received added confirmation when it was found that complement fixation was possible by means of purely chemical processes.

Without going into the question of the biological specificity of the reaction, which, in spite of all to the contrary, is still maintained by the Wassermann school, the fact of the clinical specificity of the

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From the Pathological Laboratory, Montreal General Hospital. Read before the Montreal Medico-Chirurgical Society, February 16th, 1912.

complement binding reaction seems proved. For, apart from a few exceptions, the Wassermann reaction is only obtained in syphilis. That in leprosy, malarial fever, during the febrile stage, frambœsia tropica, and recurrent fever, the same or a like reaction is obtained, seems certain. In the early days of the reaction a group of workers found a high percentage of positive results in various non-syphilitic diseases—scarlatina, broncho-pneumonia, malignant disease, tuberculosis, etc., which the later researches of those who have worked with the method more constantly have failed to confirm. The idea is still prevalent that scarlatina, *per se*, gives an occasional positive reaction. In disproof of this we would cite the results of Boaz, a Copenhagen worker of large experience, who found one weak reaction in sixty-six cases, this reaction being absent two weeks later; and of Noguchi who in sixty-three cases found one positive result in a child, later conclusively proved to be suffering from congenital syphilis. The reaction in scarlatina, even if we grant it occasionally present, is at the most a very transitory one and disappears with the subsidence of the fever. In scarlet fever, as in every other non-syphilitic disease, when a positive reaction is present the possibility of a latent luetic infection must be considered and syphilis excluded before the Wassermann test can be so disputed. With the possible exception of scarlet fever in the febrile stage, and the tropical diseases above mentioned, which in our climate play no rôle, one is justified, in the event of a positive reaction, in making the diagnosis of syphilis.

We have hinted that the original Wassermann reaction has been greatly modified since its first publication. The results obtained in the first publication, 19 per cent. of positive reactions in undoubted syphilitic cases, did not promise that the method would have the great, practical, clinical value its modifications have since evinced.

There have been numerous modifications of the method, of which it will not be necessary here to treat in detail. For our own part, after experimenting with several, the original Wassermann, the Hecht, the Tschernogubow, we have utilized the Noguchi modification with slight technical modifications of our own, in the belief that it is the most accurate and reliable, the most adaptable to all sera and the needs of the clinic, and above all, the one theoretically most correct. Without wishing to be dogmatic on the point of the superiority of this over any other method, we are convinced that certain points are essential to accurate work performed by any method. The reaction can only be carried out in properly equipped laboratories by experienced serologists. Whatever method the worker employs he should have had an adequate experience in serological work and in the method of his choice before diagnosis is attempted. And above all, he should have access to proper syphilitic controls of all his reactions.

Our own opinions are based upon the performance of over two thousand reactions, carried out in the last three years. We hesitate to put as much reliance upon the findings of the earliest period of our work, as statistics of all the cases would perhaps be misleading or unfair if the earlier failures were included. We have based the statistics we shall later refer to upon the series of cases treated by salvarsan, some three hundred and seven in number, because these have been most accurately observed, though by no means selected.

THE REACTION IN NON-SYPHILITIC CASES. In non-syphilitic cases, we have never obtained a positive reaction. Boaz, in his series of ten hundred and sixty-four cases, obtained only one positive, the case of scarlet fever above mentioned, i.e., a transitory reaction in one case out of sixty-six cases of scarlatina.

THE REACTION IN THE PRIMARY STAGE. The percentage of positive reactions in the primary stage obtained by different observers varies greatly. This is owing to the fact that the reaction does not develop till some time after the dissemination of the syphilitic virus throughout the blood of the infected person. To say exactly in each case when the positive reaction appears is difficult, owing to the doubt usually present in deciding the exact date of the infection. We have noted one case where the reaction was present six days after the appearance of the sore. On the average the reaction first appears between two and three weeks after the appearance of the primary lesion, or six to seven weeks after infection. Twenty-one out of twenty-eight cases in the salvarsan series gave a positive reaction when first noted. All of the negative cases developed later positive reactions, except one case where the diagnosis was made by the finding of spirochætæ pallidæ eighteen days after exposure, in this case the reaction remained negative as a result of immediate treatment with salvarsan. In the primary stage, as a result of the late appearance of the reaction, the finding of the spirochæte pallida is of greater value than the Wassermann reaction, but in cases where it has been impossible to demonstrate the spirochætæ pallidæ, in mixed infections, periurethral infiltrations, and phimoses, it is possible by means of the Wassermann reaction to make an early diagnosis and inaugurate antisyphilitic therapy before the appearance of secondary symptoms. Conversely in differential diagnosis, in the absence of the spirochætæ pallidæ, a repeated negative Wassermann reaction is equally important in the exclusion of syphilis. It is now a rule of the clinic to make frequent serological examinations in cases of supposed chancroids, spirochætæ pallidæ not being found, and in a considerable number of cases syphilis has been thus diagnosed before the appearance of secondary symptoms. Frequently one finds chancroids with suspicious indurations. Here, in the absence of the spirochæte pallida, a persistent negative reaction enables us to eliminate syphilis.

THE REACTION IN THE SECONDARY STAGE. Untreated cases in this stage give practically one hundred per cent. positive reactions. Referring to one hundred and thirty-nine cases in the salvarsan series, one hundred and twenty-three were positive. Of the remaining sixteen negatives, thirteen had previously received sufficient treatment to render the reaction negative; the technique in two cases we question, while only one was a definite negative. As we shall show later, in speaking of the influence of treatment on the Wassermann reaction, previously treated cases do give negative reactions, depending upon the interval from the last treatment. The reactions in the previously treated are on the whole never as strong as in untreated cases. It is hardly necessary to dwell upon the importance of the Wassermann reactions in the diagnosis of single or isolated lesions of syphilis, where otherwise recourse must be had to a more or less lengthy period of observation or to the blind empirical *post hoc* of a therapeutic test. At the same time it must be remembered in differential diagnosis, that a positive reaction does not make a definite diagnosis of any local lesion. It simply means that the patient in question has syphilis, not that the lesion in question is necessarily syphilitic. As to the value of the negative reaction in doubtful cases, it was formerly believed and is still held by many, that a negative reaction is valueless. For our own part we are inclined to believe with Boaz that untreated cases, resembling secondary syphilis, and giving a repeated negative Wassermann reaction, are in all probability not syphilitic.

THE REACTION IN TERTIARY SYPHILIS. Here the conditions are much the same as in the secondary stage. In untreated cases the reaction is practically a constant one. In cases previously subjected to treatment, the reaction can be absent, or much weaker in degree.

In the salvarsan treated series of forty-nine tertiary cases, thirty-nine gave a positive reaction. Of the remaining ten, eight had previously received enough treatment to explain the absence of the reaction, and in two we question our own diagnosis in view of the subsequent progress of the cases. The value of the reaction in the field of differential diagnosis is even greater than in the secondary stage. Much light has recently been thrown, by means of the Wassermann test, upon the nature of many visceral lesions. The part played by syphilis in the causation of aneurisms, arteriosclerosis, and certain cerebral and spinal diseases, is so well recognized as scarcely to call for notice here. All other branches of medicine and surgery are equally benefited by the serological reaction. Conversely, as in secondary syphilis, the repeated absence of a positive reaction in an untreated case resembling tertiary syphilis, renders the diagnosis of syphilis highly improbable.

THE REACTION IN LATENT SYPHILIS. In latent syphilis, only a positive reaction is of any significance. The figures of different observers vary greatly, depending on the nature and extent of treatment. Referring again to the salvarsan series of twenty-three early latent cases (i.e., within three years of the infection), eight were positive, while the fifteen negatives had previously received more or less treatment. Of the late latent cases (i.e., over three years from the infection), twelve in number, three were positive and the nine negative had been subjected to treatment. The positive reaction tends to be more frequent and more intense in inverse proportion to the amount of previous treatment. The Wassermann reaction has shown that many cases hitherto regarded as cured or immune are really suffering from latent syphilis. The immunity of mothers and infants, according to the laws of Colles and Profeta, has been shown by Wassermann statistics to depend on the fact that the so-called immune individuals are really suffering from syphilis.

THE REACTION IN CONGENITAL SYPHILIS. In this shorter series, three out of four were positive. The one negative finding was of questionable technique, and we have had no opportunity of repeating the test; seventy-five per cent. positive reactions in congenital syphilis is rather low, as compared with the statistics of larger series, which usually give over ninety-five per cent. positives. The reaction here tends to be stronger than in any other form of syphilis.

THE REACTION IN CEREBRAL SYPHILIS. Of the salvarsan series, thirteen in number, seven were positive, while the remaining six had been subjected to treatment.

THE REACTION IN TABES DORSALIS. In this series, six out of seven cases gave positive reactions, two of these being weak ones. The negative case had been well treated by mercury and potassium iodide.

THE REACTION IN GENERAL PARESIS. In this disease, which according to most observers gives a percentage of from eighty to one hundred per cent. positives, we have only two cases, one positive the other doubtful.

THE INFLUENCE OF TREATMENT ON THE POSITIVE REACTION. It is generally conceded that any treatment having any influence on the clinical symptoms exercises the same effect upon the positive reactions of the serum. We have found this the case, like other observers, and particularly after salvarsan. By technical procedures permitting the quantitative estimation of the syphilitic antibody content of any serum, it has been possible to trace the gradual weakening of the positive reaction, after treatment, from its maximum strength to its complete absence. The only exceptions have been found in primary or early secondary cases where at first the reaction has been absent or of moderate strength, and later has become positive or increased in intensity, a gradual decline to complete absence following within a few weeks. The rapidity with which the reaction disappears varies. The more intense the reaction the longer it takes to disappear. The older the syphilis the more difficult it is to eradicate it. The rapidity of disappearance varies directly with the intensity and efficacy of treatment. The shortest time of disappearance of a positive reaction has been, in a primary case, two weeks. The average time taken for the disappearance of the reaction is in our experience between five and six weeks, after salvarsan treatment.

The value of the Wassermann test in the control of treatment is important. While our observations have been more exact in cases treated by salvarsan, our experience with mercury and potassium iodide leads us to the same conclusion that others have arrived at, that salvarsan is more efficacious than mercury, and that potassium iodide has little or no influence upon a positive reaction.

If treatment has been inadequate, syphilis, true to its relapsing character, will recur. And with the clinical symptoms the positive reaction usually returns. Several of the early salvarsan treated cases who, from design on our part or neglect on theirs, only received one or two injections, returned six months later with positive reactions and definite clinical symptoms. Three of these cases were reinjected with salvarsan and the reaction observed to its disappearance. They remained free from symptoms and the reactions continued negative. Two of these have in the past few weeks redeveloped positive reactions, one case showing indefinite syphilitic signs.

The almost constant presence of the reaction in every case of syphilis, with the exception of the early primary sore; its almost constant presence in every recurrence; the influence of treatment on a positive reaction in cases of latent syphilis; the possibility of patients without symptoms but giving a positive reaction, infecting others, giving birth to syphilitic children, or later developing typical recurrences or parasyphilitic lesions; that apes can only be reinfected when the serum reaction is negative—these facts have been responsible for the axiom, first expressed by Citron, and later championed by Lesser, Neisser, Finger, and a host of others, that a positive reaction indicates the presence of active syphilis in the body of the person giving the reaction.

Granted the truth of this, the Wassermann reaction is our most valuable adjuvant in the therapy of syphilis. A positive reaction is a symptom of syphilis and must be treated like any other ordinary, clinical symptom if results are to be achieved. The findings of Boaz from an experience of recurrences larger than ours, have shown this in a most striking manner; seventy-four cases of syphilis which had been treated until symptoms disappeared and the reaction became negative, and on whom serum examinations were made regularly, developed positive reactions. He divided the cases into two groups; one group of twenty-four was left without treatment, while the larger group of fifty was treated immediately. Of the treated cases only three developed any clinical signs, these subsiding quickly during the course of treatment. All the untreated cases developed clinical signs within a period of one and a half months.

A positive reaction in the early latent period of syphilis is therefore regularly followed by a clinical recurrence. In some cases reaction and recurrence are coincident, while in a few, recurrence does occur without a positive reaction (none in our experience), but for the most part the positive reaction appears before the recurrence. If one treats the patient as soon as the positive reaction is shown, the clinical recurrence can be prevented.

In the late latent period, where the lesions are apt to be found in the internal organs, it is not so easy to prove the coincidence of reaction and syphilitic lesion. Enough conclusive findings have been observed, and, reasoning by analogy, we are justified in regarding a positive reaction as a symptom of syphilis, and treating it as such.

THE WASSERMANN REACTION IN RELATION TO TREATMENT

What part should the Wassermann reaction play in directing anti-syphilitic therapy? We have seen how valuable it is in the control of treatment. Are we justified in basing our treatment on the behaviour of the Wassermann reaction? Up to the present time the best method of treatment has been the chronic intermittent. Are we justified in discarding this well-tried method for the newer biological method of Citron? Briefly, this therapy, which has numerous adherents, consists in treating a case of syphilis intensively till the symptoms and positive reaction disappear. Examinations of the blood serum are made at regular monthly or bi-monthly intervals, and subsequent treatment is made dependent upon the Wassermann reaction, or, it goes without saying, on the presence of clinical symptoms. Should the Wassermann reaction become positive, with or without symptoms, treatment is reinaugurated and continued till the reactions and symptoms disappear. The routine of serum examinations is then continued. Should the reaction remain continuously negative for twelve months, without any clinical symptoms developing, the patient can be declared cured. Is this a method to be applied to the careless and ignorant, many of whom discontinue treatment only too eagerly, once clinical symptoms are absent? We know the toll paid by the inadequately treated in tertiary and parasyphilitic lesions. Even after salvarsan, recurrences are only too frequent; we have quoted two cases of second recurrence. Under a chronic intermittent form of treatment, all of these would probably have been prevented. The earlier and oftener the syphilitic individual is treated, the greater the chances of ultimate success.

It seems to us, therefore, in view of our present still limited knowledge of syphilis, that it will be more practicable, more advisable, nay, even imperative, to treat every case of syphilis in the chronic intermittent and intensive manner for two years at least, whether with salvarsan, with mercury, or the two combined, later applying the method of Wassermann control. If a patient so treated shows no symptom and a negative reaction over a further period of twelve months or more, he can be declared in all probability cured, though one is not yet justified in making such a definite assertion.

TABES DORSALIS: THE EXHAUSTION THEORY WITH EXPERIMENTAL EVIDENCE

By Colin K. Russel, M.D.

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FOR a disease that is clinically so common and in which autopsy material is so frequently obtained, the usually accepted pathology of tabes is most unsatisfactory and unconvincing. On looking up the usual text-books we find that such authorities as Erb, Oppenheim, and Starr, while recognizing that the disease is confined to the sensory neurones of the nervous system, admit that no satisfactory theory of its pathogenesis exists. Gowers does not attempt to discuss it, and Dana is an adherent of the mechanical theory. Nagiotte (*La Presse Médicale,* December 10th, 1902) defines tabes as a disease which is characterized anatomically by an inflammatory lesion which attacks a certain number of sensory or motor nerve roots at their exit from the subarachnoid space, and which is due to a syphilitic meningitis. He admits that this meningitis by itself is not sufficient to produce tabes, because a meningitis may be present and still no symptoms of tabes appear. He describes in his cases of tabes what he interprets as a transverse interstitial neuritis of the nerve root, which has spread inwards from the meningitis and has affected the intra-fasicular connective tissue, and he thinks the progressive character of tabes is due to the syphilitic origin of the meningitis. He states that in the early stages the lesion is seen in the intra-medullary portion of the root fibres, while the extra-medullary portion may be intact, and suggests that it is probable that the distal portion of the neurone is first attacked and that the disease progresses slowly towards the trophic ganglia. The process consists of a progressive atrophy of each fibre, characterized by a thinning and disappearance of the myelin sheath, while the axis cylinder may persist for a long time—a process differing very essentially from Wallerian degeneration, as we usually see it in an axon severed from its nucleus. He finds the anterior root frequently affected by this "interstitial neuritis," so-called, but its fibres do not degenerate peripherally, for some unknown reason. He finds that in the same case where all of the roots are exposed to the same conditions, the parenchymatous changes in the different roots and in the different fasciculi of the same root, vary with the degree of the interstitial lesion.

Mott—in the fourth volume of Power and Murphy's "System of Syphilis"—states that he has found that the changes in the cells of the posterior ganglia are indeed insignificant, as compared with the degenerative atrophy of the fibres emerging from the ganglian. In many instances some of the cells are shrunken, the nucleus is eccentric, and even the capsule empty, as if there had been a complete atrophic decay. He shows that the anterior root consisting of normal fibres, lying by the side of the degenerated and atrophied posterior root, is conclusive argument against any mechanical process of strangulation at the point of exit from the dural sheath. At the proximal end of the ganglion in the entering root, there are seen fine fibres, but these are much attenuated; while at the distal end the fibres appear healthy. In longitudinal sections of the posterior spinal ganglion, with a long attachment of the ventral and dorsal roots, the myelin sheath of the fibres, which still possess the property of staining blue with Pal Weigert stain, becomes somewhat attenuated and fainter as one proceeds away from the ganglion towards the cord. Again, one finds the peripheral fibres proceeding from the ganglion quite healthy in appearance as regards the myelin staining, and yet remote sensory fibres are degenerated.

We have, then, speaking generally, an atrophic condition of the sensory protoneurones, which is most marked, as both Nagiotte and Mott show, in the peripheral parts of the neurone and especially in the intra-medullary part. Mott has shown conclusively that the chronic meningitis, with the associated transverse interstitial neuritis, cannot be the cause, and one would naturally expect that if such a strangulating process were at work, we should see the characteristic Wallerian degeneration with the fatty degenerative changes of the myelin sheath and the breaking up of the axis cylinder. These changes after any sort of injury would be more pronounced near the injury in the early stages and diminish towards the periphery; whereas in tabes there is a simple atrophy of the whole axis cylinder beginning at its extermity, and there is no breaking up of the myelin into fatty globules. Modern research shows a profound biochemical change in the blood as the result of the action of the syphilitic virus, and according to Mott it is possible that there is a biochemical defect or subminimal deficiency in the blood of lecithins or lipoids.

From my experience with this disease, I am of the opinion that there is a mildly active, chronic syphilitic process about the vessels and in the meninges, but that this does not cause the lesion in the posterior columns by any mechanical process, but rather by generating toxines and producing the biochemical changes in the blood referred to by Mott, and these retard the anabolic processes of the cells.

That there is an active syphilitic process present I think is evidenced by the increase in the globulin content of the cerebrospinal fluid, in the lymphocytosis present in these cases, and the fact that both the globulin content and the lymphocytosis can be very materially and beneficially influenced by treatment with salvarsan, as we have proved in the Neurological Outdoor Clinic at the Royal Victoria Hospital. I hope this will later be the subject of a paper by Drs. Kaufmann and Landry, who have been doing this work. That this syphilitic process does not act mechanically, as held by Nagiotte, Obersteiner, and most other teachers, I think has been sufficiently shown by Mott's observations already quoted. And besides this, it is impossible to imagine how such a process, acting mechanically, could produce an Argyl-Robertson pupil with the loss of reaction to light, while still retaining its activity to accommodation; or again, could it explain why, in individuals whose occupation leads them to use their arms more constantly than their legs, the symptoms of tabes affect chiefly those parts most used and we get the lesion in the cervical cord. I presented to this society,* on a former occasion, very good examples of this. One was a tailor who while at work for many hours of the day sat on the floor and sewed. He showed quite normal coördination in the lower extremities, but in the arms, a marked ataxia, and moreover, as in threading his needle he was constantly using the muscles of accommodation, he had a very marked paresis of both internal recti and his pupils no longer reacted to accommodation or to light. The other two were similar cases.

I would like to quote another case, a man aged forty-four, with typical tabes, the lightning pains and the ataxia, the Argyl-Robertson pupil, and loss of tendon jerks; he said he was able to hold his urine for twelve hours without distress, and had some hesitancy in starting micturition. He had had lues twenty-five years ago. He stated quite spontaneously that for some years his duty had been to go and clear up any wreck that occurred on the railroad, and of course this work had to be done quickly. On many occasions he would be on his feet for thirty-six hours, or more, working strenuously, and he had frequently noticed that at the end of this time,

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*Montreal *Medical Journal*, Vol. xxxix, March, 1910, p. 162.

when he was tired, he would have unsteadiness and difficulty in walking similar to that present at the time of examination, but that this would pass away in two or three days with rest. His ataxia had really begun only two months ago, after a severe grippy cold, combined with a certain degree of mental worry and distress owing to the illness and final death of his mother.

It seems reasonable to suppose that if a cell is not getting proper nutrition and yet continues to function, the katabolic changes will gradually overbalance the anabolic ones, and that the cell will sooner or later reach a condition of exhaustion; and if this exhaustive process proceeds very slowly it will lead to a condition of atrophy. The cell, in its efforts to survive, would sacrifice first its most distal extremities, just as in the plant that has not been watered enough for some time, it is not the root that dies first but the distal leaves and branches, so in the cell we would have an atrophy—not a degeneration—in the part of the axis cylinder most distal from the cell body, as has been described in tabes. The fact that the intra-medullary parts of the neurones have no neuralemma sheath, while the peripheral fibres have, is probably sufficient reason for the relatively greater affection of the former portion of the neurone—although degeneration of the peripheral part of the neurone does occur as well. We would not expect to find any marked changes in the cell itself, because once its fibres have atrophied and their place has been taken by the proliferation of the surrounding connective tissue, as happens in any organ when the parenchymatous tissue goes under, it no longer functions, and, consequently, the cause of katabolic change being to a large extent removed, the cell regains a more or less normal appearance, which explains the absence of lesion in the posterior ganglia.

With such a biochemical change in the blood, noted by Virchow, Martin, Hillis, and Auz, the anabolic changes must necessarily be retarded to a greater or lesser degree, and one must realize that where the katabolic changes due to activity or functioning of the cell are continually greater than the anabolic ones, if only to a slight extent, that cell must suffer in the same way as a plant does that gets insufficient water. Now, where all the cells of the nervous system are under the same conditions of nourishment, we might expect all to suffer similarly and to an equal extent; but if we consider the function of the various systems of neurones, we will realize that certain cells are almost constantly active while others are not. For instance, those neurones which subserve the function of maintaining the tone of the muscles, and those that convey the sense of position of the muscles, are functioning continuously. Under these conditions we would expect these cells to suffer first, producing the loss of tone and loss of sense of position of the muscles—which later gives rise to definite ataxia—that one sees in very early tabes. And if one extremity, or a pair of extremities, is continuously used much more frequently or strenuously than the other extremities, then the neurones maintaining and regulating the tone of the muscles of that extremity and the sense of position of its muscles, will have relatively far more work to do than those of the other extremities and will become exhausted and atrophied more quickly. Thus, in the case of the tailor quoted above, who used his arms chiefly, the symptoms were confined to those parts which he most frequently used. The action of stimuli from the sensory neurone of the spinal reflex arc on its motor neurone is responsible for the maintenance of tone in the muscles, and when the sensory neurone, through its constant activity, becomes at last exhausted, the break in the reflex are thus formed causes also the loss of tendon jerks. The objection might be advanced that the anterior horn cells should also become exhausted and atrophied, but, as Gordon Holmes pointed out, if one considers that they are so constituted normally as to respond to two sets of stimuli—first those from the motor cortex through the pyramidal tracts and secondly the reflex ones—one can realize that they may have the power to recuperate while one of these is not acting.

The neurones which subserve the sense of position in the muscles travel in the cord in the posterior columns, as has been shown by Henry Head, and these being exhausted and having become atrophic, there is the consequent overgrowth of fibrous tissue and sclerosis of the posterior columns. Possibly this complementary overgrowth of fibrous tissue has been interpreted by Nagiotte as interstitial neuritis. In the same way one can explain the Argyl-Robertson pupil with its loss of reaction to light and its activity to accommodation. The pupil normally reacts very much more readily and rapidly to light than it does to accommodation. In glancing about, unless one focuses on a near object, after looking at a distant one, there is no reaction to accommodation; but if one glances from a window to a wall or any darker object, or from a lamp to a book, or the carpet, there is a reaction to light, so that these neurones which serve the reaction of the pupil to light become exhausted first, with the subsequent immobility.

The bladder symptoms of tabes may be explained in the same way. The sensory neurones constantly conveying sensations from the bladder become exhausted, with consequent production of loss of vesical sensibility, and I continually get a history of the patient being able to retain his urine for twelve hours or longer without discomfort in the early stages. Loss of tone in the bladder wall naturally follows, and causes that ordinary symptom of not being able to start micturition immediately on the attempt. With the loss of sensibility and tone, and consequent overburdening, the work of the sphincter is increased, and it finally gives out, giving rise to the distressing incontinence of urine.

Thus one can explain the greater frequency of the disease in men than in women—because men in the pursuit of livelihood, or from their habits, naturally expose themselves to the chances of greater fatigue than do most women. Mendel's statistics are very interesting in this respect. He showed that in his private sanatorium, among the better classes, tabes occurred in the proportion of twenty-five times in men to once in women, while in his public clinic, where the women practically competed with the men in their struggle for existence, and so were exposed to very much the same exhausting conditions, the proportion was only three men to one woman. The rapid increase of the symptoms of tabes following some acute infection will now be recognized as due to the sudden addition of toxines still further retarding the anabolic changes, and the associated fever hastening the katabolic changes in cells already affected and with little resisting power left.

By this explanation of the symptoms we can understand why, when optic atrophy develops, ataxia so seldom does, because when a man is blind, or partially so, he cannot get sufficient occupation to fatigue or exhaust the neurones, and one might suppose that the mental worry caused by the onset of illness, with the consequent inability to provide a livelihood, would produce a similar condition of exhaustion of neurones in the cerebral cortex and account for the great proportion—amounting to fifty per cent. in Mott's experience—of cases with optic atrophy that develop general paresis.

It gives us also a very reasonable explanation for the fact that tabes is so seldom seen in the natives of Egypt, although syphilis is so widespread among them. Here the natural habits of the native, with his absolute lack of any impelling ambition, prevents his allowing himself to become sufficiently exhausted to produce the lesions of the disease. In Japan, too, until quite recent years, the scarcity of cases of tabes was remarkable, while, more recently, following their entrance into the national arena in competition with other civilized nations, tabes has become comparatively common. The great incidence of the disease in soldiers in a campaign has often been noted and by this theory is at once explicable—the unusual over-exertion and exposure being sufficient reason. The lightning pains, the girdle sensation, and the various visceral crises, of course, cannot be explained on the theory of exhaustion; but I am of opinion that these are due to the irritation of the nerve roots by the actual syphilitic meningitis, and in support of this is the fact that they are practically always very considerably benefited, if not removed entirely, at least for a time, by the use of salvarsan.

We have seen, then, that this theory accounts most satisfactorily for the pathological anatomical picture in tabes. It accounts just as satisfactorily for the clinical symptoms and explains various peculiarities of the disease otherwise unaccountable. We must recognize with Edinger that *function creates the symptom complex.* Since this theory was advanced by Edinger (*Deutschen Medizinischen Wochenschrift,* 1905, I have endeavoured to add some experimental proof to the great weight of clinical and pathological evidence of its truth. This was impossible until the discovery of the spirochætes and the inoculability of the lower animals, and I wish to express here my very sincere thanks to Dr. R. P. Campbell, of the Montreal General Hospital, for giving me two rabbits which he had inoculated with syphilis. The first, No. 9 of his series, was inoculated in November, 1910, from a chancre which he had produced in another rabbit, No. 5 E; and the other, No. 14, was inoculated in August, 1911, from condylomata and mucous patches, and developed a small chancre in September in which spirochætes were found. The Wassermann reaction was reported positive in the blood of both by Dr. J. C. Meakins. These I exposed to a sort of miniature revolving lighthouse, so that they were constantly subjected to alternating light and darkness, with the idea of causing fatigue of the pupillary reflex to light and consequent atrophy with impairment of function of these neurones, with the formation of the Argyl-Robertson pupil. Judging that if I could prove this exhaustion theory in one instance—that is, prove that one symptom of tabes was caused in this way—we might argue that the other recognized symptoms are produced similarly. In about seven weeks the first rabbit exposed developed a definitely immobile pupil, moderately dilated and inactive to light, and I think, though this is of course difficult to prove, active to accommodation. Unfortunately the rabbit, most inopportunely, developed a pulmonary abscess at this time and soon died, so that I could not feel sure that the pupillary symptoms were produced by pure exhaustion. However, the second rabbit, in about the same length of time, also developed a similar condition. The normal control rabbit, which has been under the same conditions, has still a perfectly normal reflex action to light, while in the syphilitic one no reaction can be obtained. At times the pupils react to accommodation, but this is difficult to demonstrate.

In no other case among Dr. Campbell's inoculated rabbits which have not been subjected to this intermittent stimulation by light, do the pupils show anything abnormal.

One must conclude, I think, from these experiments that the intermittent stimulation of the pupillary reflex arc by light has produced an exhaustion and loss of function giving rise to a characteristic Argyl-Robertson pupil. And it must be agreed, I think, that this is incontrovertible evidence of the truth of Edinger's dictum: "In tabes, function produces the symptom complex."

In a former paper I showed how, with this explanation of tabes, we have immediately definite indications for the treatment of this disease, and how the results of treatment along these lines give added evidence of the truth of this theory, which is now, I think, established.

Case Reports

BRONCHOSCOPY

THE following is a report of a case of aspiration of a silver tracheotomy cannula and removal by lower bronchoscopy.

Patient, Mrs. F. H., aged thirty-six, Finn. Six years previously had had a tracheotomy performed in Finland for laryngeal diphtheria, since when she had always worn a tracheal tube, and incidentally had become quite expert in its removal and cleansing.

On the afternoon of February 5th, however, upon attempting to withdraw the cannula, the collar became detached, allowing it to recede into the trachea. This was followed by a momentary spasm during which the patient quickly introduced a second tube, of which she had an assortment, and after a brief spell of coughing, accompanied by deep inspiratory movements, the patient suffered no further inconvenience.

Two hours later, when I saw the woman in consultation with Dr. Williamson, of Port Arthur, we found the patient apparently no worse for her experiment, and indeed, had it not been for the mute evidence of the broken cannula-collar, we might have been tempted to doubt her veracity. Physical examination of the chest was negative.

Rough sketch of metal tracheotomy cannula, showing ragged upper end aspirated into left bronchus.

In virtue of the prime importance of early treatment in such cases, however, I had the patient removed to the R. M. G. Hospital for *x*-ray examination, which was successfully done by Dr. Williamson, the missing cannula being located in the left lower quadrant of the heart shadow.

Under infiltration anæsthesia, the tracheal wound was enlarged and the trachea cocainized with 20 per cent. cocaine. The 7 mm. Jackson bronchoscope was then introduced without difficulty and passed down into the left bronchus.

At about 6 cm. beyond the bifurcation the round, ragged, upper edge of the cannula was discovered firmly wedged in one of the posterior branch bronchi. About one-third of the edge of the tube was already over-lapped by œdematous mucosa, so that, had there been much delay, it is certain great difficulty would have been experienced in seizing and removing the tube. As it was, however, this was quite readily done, although, on account of its size and shape, it was necessary to remove the cannula, forceps, and bronchoscope with one motion.

A fresh tracheal tube was then inserted, and the patient left the hospital the following morning no worse for her unique experience.

JOHN G. HUNT.

Fort William.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

The twelfth annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held in the Margaret Eaton Hall, Toronto, from May 20th to May 21st, 1912, under the presidency of Dr. J. G. Adami. The following is the programme: Monday, May 20th, reports from Delegates, report of Executive Council, Notification of Phthisis, by Dr. Craig, Appointment of Committees. In the afternoon, President's Address; Modern Public Health Teaching and Practice in Relation to the Control of Tuberculosis, by Dr. Wesbrook; Some Social Aspects of Tuberculosis, by Mrs. Shortt. In the evening, address of welcome by the Mayor; Administrative Control of Tuberculosis, by Dr. H. M. Biggs. On Tuesday, May 21st, the following papers will be read: The Importance of the Pre-Tubercular Stage, by Dr. R. C. Paterson; The Value of the Dispensary to Public Health, by Dr. E. S. Harding; Treatment of Pulmonary Tuberculosis by Means of Graduated Labour, by Dr. Oliver Bruce; Care of the Patient After Leaving the Sanatorium, by Dr. Parfitt. Reports of committees and election of officers will then follow. In the afternoon, the members will be received by the "Heather Club."

Editorial

HEALTH PROBLEMS IN ONTARIO

"HEALTH problems" was the subject of an address recently delivered before the Kingston Medical Association by Dr. E. Ryan. The research work accomplished in the laboratory, the secrets revealed by the microscope, and the consequently wider field of vision open to the medical man of the present day, places the science of medicine on an eminently better footing. The physician no longer is satisfied with diagnosis and treatment; he has come to realize the vast possibilities of preventive medicine—the whole range of the mental, physical, and to a large extent moral life of mankind being now brought within his scope. The time has come, and is now at hand, when Canadians must wake up to the fact that many problems of public health urgently require attention and that it is essential that they be dealt with without further delay. The mortality of infants is much greater than it ought to be. This was also the case in Germany; a commission was appointed to investigate the cause; it was found that the mortality was particularly great among children artificially fed; preventive steps were taken and the death rate has now fallen from eleven to two per cent. Another vital problem is the admission of immigrant undesirables. Hospitals for the insane are overtaxed with such patients, continual cases of stabbing and other crimes perpetrated by these foreign degenerates are before our courts, and our hospitals record case after case from among these same immigrants—undesirable citizens who should never have been allowed to enter the country. What is to be done? To use Dr. Ryan's own words: "What a splendid field is here for the organizing labours of an intelligent commission!" Yet another problem is the disposal of sewage. The water supplies are becoming more and more contaminated. Recent tests of the waters of Lake Ontario seem to indicate that the water of that lake is contaminated throughout. All sewage should be treated artificially, either by filter beds or chemically. Much might still be done in Ontario to cope with tuberculosis. Dr. Ryan spoke of the work done in New York and in the county of Durham, England. Perhaps the most advanced of all movements is that known as the "Edinburgh scheme": sanitaria for patients in the earlier stages have been established, hospitals for the chronic cases, and, in addition, a farm colony for rest and treatment—great importance is attached to the value of the fresh air treatment. Another point to which Dr. Ryan drew attention was the prevention of infectious diseases. Apart from small-pox, probably no disease is treated with sufficient sanitary precaution, and the physician frequently omits to report the existence of such cases.

Dr. Ryan concluded his remarks with the recommendation that a government commission be appointed to investigate these conditions, and that it should submit a full report to parliament. The findings of this commission would indicate the means to be taken in the future.

THE ISLAND PROVINCE

THE fight against tuberculosis is being carried on with success in Prince Edward Island. Improved sanitary conditions, more efficient ventilation in the home, and a better understanding of the general rules of health are the result, says president W. F. Tidmarsh in his address before the Charlottetown branch of the Anti-tuberculosis Society.

A free dispensary is now maintained by voluntary subscription; and the citizens have shown the most generous appreciation of the efforts of the association. Much disappointment has been felt in the attitude of the city council, utter indifference to the work of the society having been shown by that body. It is hoped, however, that the recently elected council will evince more interest in the campaign against this disease, and will show its appreciation of the work done by practical financial assistance. The dispensary, although primarily intended for the treatment of tuberculosis, receives for treatment other patients: during the past year one hundred and fifteen patients were treated, of whom only thirty-five were tubercular. The association intends, if possible, to continue the work, but it is feared that, unless some financial aid is given by the city council, such a course may become impossible and the association be compelled to confine the treatment given in the dispensary to tubercular diseases.

A civic by-law was passed on December 12th, which provided for the proper inspection of milk. Unfortunately, this law has never been enforced. The law is an extremely important one and its rigid fulfilment should be made compulsory. The necessary steps should also be taken to secure provincial and civic inspection of meat and other food products. Yet another point, to which attention was drawn by President Tidmarsh, is the extreme discomfort suffered by patients who are brought in from country districts for treatment in city hospitals. No provision for such cases is made on the Prince Edward Island railway. If they are unable to sit up, they are placed in the baggage car, exposed to draughts and the rude gaze of the passer-by; if they are able to sit up, they are placed in an ordinary seat in the coach. It is hoped that something may be done to ameliorate these conditions.

MEDICINE IN SOUTH AFRICA

THE South African *Medical Record* of February 24th gives a full account of a discussion of the Public Health Acts Amendment Bill. The Minister of the Interior, in moving the second reading of the bill, stated that the laws, as they existed in the various provinces, were not sufficiently effective in the case of epidemics, neither were the laws dealing with public health adequate. The position was all the more serious in view of the fact that in South Africa they had to face the possibility of epidemics of such dread diseases as bubonic plague, tuberculosis, small-pox, sleeping sickness, and many others. The government at present was not in a position to bring in a bill which would cover the whole ground. The question had been complicated by the South African Act. Certain powers had been relegated to the provincial councils, and local authorities had been vested with power in regard to public health questions and sanitation. Under the present bill, an officer of health for the whole Union would be appointed and an administrative department would be established; there would be a staff of experts who would confine themselves to the technical side, while the actual administration of public health laws would be in the hands of the Minister of the Interior. The public health of any particular district would be in the care of the local authorities and the government would only interfere in the case of serious dereliction of duty, or in the case of any serious outbreak of disease. Were an epidemic of bubonic plague, sleeping sickness, or small-pox reported, the government would interfere at once.

The bill was strongly objected to by Dr. J. Hewat, of Woodstock, on the following grounds: It was going to remove the medical officers from the various provinces; it was going to replace the advisory board; and it was going to constitute the Minister of the Interior the medical officer, the advisory board, and everything connected with public health. In short, it was going to nullify all that had been accomplished during the past ten years. By the provisions of the bill there would be a medical officer of the Union, medical officers of health, and assistant medical officers of health, who would all report direct to the minister, but who would not work together as a combined body. The result naturally would be confusion. There was no machinery in the bill whereby the medical officers of health could get at the general condition of the health of the country. The provincial councils were to be absolutely deprived of the public health departments. And what was going to happen to the three hundred district surgeons in the country? The public were beginning to realize that more attention must be paid to public health and that preventive measures against disease were essential. He hoped the minister would realize that a department of public health was absolutely necessary.

Mr. W. D. Baxter, of Cape Town, stated that, under clause 11 of the bill, the minister had power to force the local authorities to act as he saw fit and thus infringe upon the proper rights of the provincial council. Chaos and friction would result, and all power would be concentrated in the hands of the Minister of the Interior. The laws for each province were distinct and different from each other in many ways, and he considered that matters pertaining to each province should be dealt with by the provincial council and not by one single office in Pretoria. The debate was adjourned and we are without further report, but the solution of the difficult problem will be awaited with interest.

DIVISION OF FEES

AT the regular meeting of the Vancouver Medical Association on March 11th, the question of the division of fees between specialist and general practitioner was discussed. The meeting considered: That the payment of a commission by a medical man to any person who might influence patients to apply to him for professional advice or treatment is unethical and unworthy of any member of the medical profession; that a specialist is entitled to receive his regular fee direct from the patient, without reference to the medical man in charge of the case; that, when the regular attendant has assisted the specialist in the diagnosis and treatment of the case, his fee may be added to that of the specialist, or the two accounts may be rendered separately; that in cases where the specialist is called in to assist in the diagnosis or to operate, but where the the entire management of the case devolves upon the regular attendant, the latter shall send a joint account, or the accounts may be rendered separately; in such cases, the surgeon's fee shall not be less than one-half of the amount he would charge if the case were under his sole management. It was also considered the duty of members of the association to report to the executive any cases of such commission having been paid by a medical man. This decision appears to us to be entirely sound, and we commend it to other societies.

HEADACHE POWDERS

BULLETIN 230 from the laboratory of the inland revenue department contains a report, by Dr. A McGill, the chief analyst, on one hundred and fifty samples of headache powders. These are usually put up in packages of one dozen. Two powders from each package were examined. The duplicates were found to be very similar, but, in a few instances, there was considerable variation in the amount of the potent drug.

In one hundred and eighteen samples acetanilide—antifebrin—was found; it usually appeared alone, but, in a few cases, phenacetin was also present. This latter drug constituted the principal component of twenty-four samples, while eight preparations were found to contain aspirin—acetosalicylic acid, a drug which is not scheduled by the Proprietary, or Patent Medicine, Act.

The drugs contained in the powders are frequently disguised under technical synonyms, which are not understood by the general public. For instance, phenacetin appears under the name para-acetphenetidin or para-oxyethylacetanilide. Or the declaration of the drug is included in such a mass of reading matter that its presence often escapes attention. Dr. McGill suggests that the employment of commonly accepted names of drugs be made compulsory.

In none of the powders examined did the amount of phenacetin exceed the amount specified—five grains—in section 7 of the Proprietary, or Patent Medicine, Act. Of those containing acetanilide, sixty-two declared the presence of the drug, but the amount contained was in excess of two grains, the maximum stated in the above Act. Twenty-seven contained the drug in small quantities, but did not declare its presence. Eleven contained excessive quantities of the drug, but were protected by bearing a stamp and thus being designated as "old stock"—Circular G. 843. Fifteen contained large quantities of the drug, without declaring its presence, and, consequently, are amenable to the penalties fixed by section 1 of the Patent Medicine Act. Eighty-eight samples of the one hundred and fifty examined make distinct claim to curative powers. Such claims are unwarranted, and should be punishable under the Act.

In one or two cases these headache preparations were found to be put up in the form of lozenges or chocolates. Dr. McGill draws attention to the danger of such a practice. The results of the last examination of preparations of this kind were published in Bulletin 113: the examination was made in June, 1905. Twenty-eight samples out of the thirty examined were then found to contain acetanilide.

It is evident from this report that the Proprietary, or Patent Medicine, Act has had a wholesome effect on the preparation of such powders. Seven samples of "old stock" preparations—that is, powders which were in the hands of the retail dealer when the Act came into force—were examined also. The average amount of acetanilide contained was shown to be over five grains. The danger incurred by the use of large quantities of a heart depressant such as the drug in question is self-evident.

ABUSE OF CONFIDENCE

THERE is an old saying that a man should always tell the truth to his banker and to his physician. A man who lies to his banker is apt to find himself in gaol. The penalty for lying to a physician is not prescribed in the code. A certain amount of confidence in the word of the individual is the basis of all society and the foundation of every day life. But it is not always possible to obtain tangible proof that a statement made is correct. Therefore, unless an individual is notoriously untruthful, or there is other grave reason for doubt, his given word is accepted. This fact is not recognized by the Toronto Street Railway Company, which, by a series of frauds, would seek to shake the very foundations of all social organizations. They would turn the machinery of justice into a jest; they would deceive the medical examiner, and so make it impossible for him to make a correct and just diagnosis; they would make the individual into a cheat, and all this to serve their own ends and make it impossible for a person who has been injured in any way by or through that company to demand just compensation.

One day last October, a man named Burnett came to the surgery of Dr. A. H. Garratt, in Toronto. The man stated that he had been injured through a fall from a street car. He described his sufferings and was treated by Dr. Garratt. Later, Burnett brought a suit against the Toronto Railway Company in which Dr. Garratt gave evidence. Burnett then went into the witness box and stated that he was in the employ of the Toronto Railway Company, and that the whole case was a fraud.

This disgraceful affair was designed to injure the entire medical profession by casting doubt upon the word of the physician involved, and to create a precedent by which any action brought against the Toronto Railway Company at any future date might be annulled. Such an action on the part of any company is almost incredible, and a menace to the entire community.

The Secretary wishes to call the attention of members to the fact that all subscriptions to The Canadian Medical Association Journal should be sent to Dr. H. B. Small, Ottawa, who is Treasurer of the Association. Members are particularly requested to forward their subscriptions to Dr. Small.

Striking evidence of the growth of the demand for hospital facilities was given in the report of the president of the Kootenay Lake General Hospital. The number of patients has increased by fourteen per cent. during the last twelve months, and the accommodation provided in the present building is quite inadequate to meet the demand. A new hospital is soon to be commenced, in which there will be accommodation for sixty beds. The estimated cost is $60,000. The new building is to be placed in that portion of the city park which adjoins the present hospital grounds on the east. When the premier of the province and the minister of agriculture visited Nelson three years ago, the board was given to understand that the provincial government would give an amount equal to any sum that the directors might succeed in obtaining by voluntary subscription, provided that sum did not exceed $40,000. The public has made a most generous response to the appeal of the directors, and the sum of $19,467.35 has been subscribed. In addition to this, the city of Nelson has contributed $15,000. The total amount promised is already $34,467.35, which, together with a like amount from the government, amounts to $68,934.70. It is confidently expected that $80,000 will be finally available.

An unfortunate event has happened in Dorset, Ontario. Six members of the family of Angus Mackay were affected with scarlet fever and five of them died. A rumour became current that the disease had been propagated from the Toronto Western Hospital. It appears that the eldest daughter of the family had entered the hospital a few weeks before as a nurse. She was taken ill and after a few days died. The body was brought home for burial, and out of this fact arose the report that the hospital had been at fault. Upon investigation it was found as usual that the report had no basis in fact. Shortly after the arrival of the nurse she developed tonsilitis. She was attended by Dr. McCullough, the medical superintendent, and he had in consultation with him Dr. J. Price Brown, Dr. Geoffrey Boyd, Dr. F. C. Trebilcock, Dr. Henry A. Beattie, and Dr. John Ferguson. They all agreed that the case was one of pneumonia. It is not often that a hospital has the opportunity of being so completely exonerated.

THE town of Petrolea, Ontario, appears to have enjoyed immunity from any severe outbreaks of disease during the past year. In his report before the Board of Health, Dr. R. S. Macalpine, M.H.O., commented upon the improvement in the milk supply, due to the recent enforcement of the law. He also made some interesting remarks on the eleventh annual meeting of the Canadian Association for the Prevention of Tuberculosis, and enumerated some of the advantages to be gained by the establishment of local sanitoria throughout the country, where the disease might be treated and instruction given as to the best means of prevention. The establishment of such institutions would necessarily involve great expenditure of money, and Dr. Macalpine spoke highly of the liberality of the local government. He also emphasized the work which might be done in public schools to aid in the fight against tuberculosis, by training the physique of the child and by teaching him how to prevent the disease. Another question to which Dr. Macalpine drew the attention of the Board was that of the sanitary disposal of garbage and the necessity of ameliorating the conditions existing in certain localities.

Book Reviews

A POCKET ATLAS AND TEXT-BOOK OF THE FUNDUS OCULI. Text by C. LINDSAY JOHNSON, M.A., M.D.; drawings by ARTHUR W. HEAD, F.Z.S. F. A. Hardy & Company, Chicago.

Mr. Lindsay's object in producing this work was to afford the practitioner of medicine and the medical student a ready means of diagnosing the internal diseases of the eye; and it must be said that he has accomplished his purpose in a high degree. The author devoted the first chapter of his book to the necessary description of the ophthalmoscope and its uses; then briefly reviews the anatomy of the parts involved; and finally takes up in order the various normal and abnormal conditions which occur in the fundus oculi. Accompanying the text are fifty-five admirably coloured drawings by Mr. Head, and a convenient note and drawing book for ophthalmoscopic purposes, also by Mr. Head. The work is well printed and attractive in its pocket-book cover, and altogether makes a very handy, compact manual, which is eminently suited for use by ophthalmoscopic classes.

RECENT METHODS IN DIAGNOSIS AND TREATMENT OF SYPHILIS. (The Wassermann Reaction and Ehrlich's Salvarsan, "606".) By C. H. BROWNING, M.D., Lecturer on Bacteriology in the University of Glasgow, and IVY MCKENZIE, M.D., Director Western Asylums' Research Institute, Glasgow. Octavo, 303 pages. Cloth, $2.50, net. Lea & Febiger, Publishers, Philadelphia and New York, 1912.

The development during the past year in the treatment of syphilis has been so rapid that all but specialists must be bewildered. Nearly all the journals, in every issue, have important articles dealing with a wide range of experience with the new methods. Monographs are appearing constantly, and the results are being summed up in booklets. Accordingly, we hasten to call attention to this work of Drs. Browning and McKenzie from Glasgow. The contents of the volume are essentially a record of original research. Although a considerable part of the results have appeared in different form in various journals it is none the less valuable when here gathered together. The introduction is by Professor Muir, and deals with the general principles underlying the Wassermann reaction and the operation of salvarsan. Without being unduly sceptical, Professor Muir exercises proper caution. The authors enumerate sixteen papers contributed by themselves and their associates, Morton, Gilmour, Chislett, and Cruickshank, to the periodical literature. The labour involved in the preparation of this work must have been immense, and for it the profession will be correspondingly grateful. The book is one for experts, but it will be read with avidity by all who are interested in the treatment of syphilis.

Modern Methods in Nursing. By Georgiana J. Sanders, formerly Superintendent of Nurses at the Massachusetts General Hospital, Boston. 881 pages; 228 illustrations. Cloth, $2.50 net. Philadelphia and London: W. B. Saunders Company. Toronto: The J. F. Hartz Co., Ltd., 1912.

This book of nearly nine hundred pages, as well written as the average text-book in medicine, illustrates very well the importance of this new vocation which has grown up in the last twenty years. Miss Sanders has an unusual equipment for her task by reason of a large experience in England, in Boston, and in Philadelphia, besides a natural talent for writing and for arrangement of material. The introduction covers fifty-eight pages. It might well be printed as a separate book and issued by every hospital as a grave warning to applicants and probationers of the qualifications and responsibilities which are required of them. Nowhere else has the subject received so full and temperate a discussion. This is quite the most complete book on nursing we have seen.

An Introduction to Therapeutic Inoculation. By D. W. Carmalt Jones, M.A., M.D. The Macmillan Company of Canada, Ltd., Toronto. Price $1.25 net.

The author of this book succeeds in his attempt to make clear the principles which govern therapeutic inoculation. This he does in the first part. In the second part he deals with the treatment of many infections by means of inoculation. The principal source of information was St. Mary's Hospital and the work which is done there. The technique of the method is described in an elaborate appendix. At a time when the subject is receiving so much attention this book is sure to be of interest to laboratory workers and to others who are concerned most about results.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

THE TREATMENT OF FRACTURES BY MOBILIZATION AND MASSAGE. By JAMES B. MENNELL, M.D., B.C., with an introduction by DR. J. LUCAS-CHAMPIONNIERE. The Macmillan Company of Canada, Ltd., Toronto. Price, $3.50 net.

AN INTRODUCTION TO THERAPEUTIC INOCULATION. By D. W. CARMALT JONES, M.A., M.D. The Macmillan Company of Canada, Ltd., Toronto. Price, $1.25 net.

A POCKET-ATLAS AND TEXT-BOOK OF THE FUNDUS OCULI. Text by C. LINDSAY JOHNSON, M.A., M.D.; drawings by ARTHUR W. HEAD, F.Z.S. F. A. Hardy & Company, Chicago.

PHYSIOLOGY OF THE SEMICIRCULAR CANALS AND THEIR RELATION TO SEA SICKNESS. By JOSEPH BYRNE, A.M., M.D., LL.B. J. T. Dougherty, New York.

ANÆSTHESIA AND ANALGESIA. By J. D. MORTIMER, M.B., F.R.C.S. 276 pages, 29 illustrations. Price, $2.00; D. T. McAinsh & Co., Toronto.

MINOR SURGERY. By L. A. BIDWELL, F.R.C.S. 265 pages, 88 illustrations; price, $2.00. D. T. McAinsh & Co., Toronto.

HEALTH AND MEDICAL INSPECTION OF SCHOOL CHILDREN. By WALTER S. CORNELL, M.D. Illustrated with 200 half-tone and line engravings. F. A. Davis Company, Philadelphia.

FORMULAIRE DES MEDICAMENTS NOUVEAUX, 1912. By H. BOCQUILLON-LIMOISIN. J. B. Bailliére et Fils, Paris.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Vol. XXIX. Edited by ARCHIBALD MACLAREN, M.D. William J. Dornan, Philadelphia.

Men and Books

By Sir William Osler

X. Gui Patin. One physician we know thoroughly, and one only—Gui Patin, Dean of the Faculty of Medicine, Paris. His ways and works, his inmost thoughts, his children, his wife, his mother-in-law (!), his friends, his enemies—the latter *very well*—his books and pictures, his likes and dislikes, joys and sorrows, all the details of a long and busy life, are disclosed in a series of unique letters written to his intimates between 1630 and 1672. But this is not a biographical note—I wish only to lodge a protest and to express a hope.

Editions of the famous letters are common, from that of Frankfort, 1683, to the three volumes of Réveillé-Parise, 1846—fourteen in all, and all imperfect, many garbled. A unique and priceless contribution, general and medical, to the history of the seventeenth century, "forming," as Triaire says, "a veritable diary improvised day by day, a mordant chronicle of the times by one of the most brilliant, the most alert, the most spirituel and the most satyric of the period." The worst possible luck has dogged all attempts to issue a definitive edition. Formey, of the Berlin Academy, in 1770, conceived the design to issue the correspondence complete with notes, but nothing came of it.

The edition of Réveillé-Parise, the only one of the nineteenth century, while a great improvement upon and much fuller than any other, had many errors, and perhaps deserved the severe handling given to it by Sainte-Beuve. MM. de Montaiglon and Tamisey de la Roque had collected material, collated the letters, and had one volume ready when, in 1895, a fire destroyed every page of their manuscripts. Not a whit discouraged by the ill-success of his predecessors, Dr. Paul Triaire, of Tours, already well-known for his biographical writings, undertook the task, and in 1907 issued one splendid volume containing the letters from 1830 to 1848. As illness overtook him, the work could not be completed, and the death of the accomplished editor has just been announced. It is a sad loss, a calamity in the world of letters.

Now for my protest: It is not often that a Frenchman makes a mistake in matters literary, but there is one Pierre Pic, whom I would like to shake for the disappointment caused by a wretched abortion which has seen the light under the title of "*Gui Patin, avec* 74 *portraits ou documents*," Paris, G. Steinheil, 1911. Pic has the shamefacedness to acknowledge that he does not know much of his subject—"Mais mon bagage à son sujet n'était pas lourd." This is evident. From two old editions which he has picked up he has sorted various extracts from the letters, but he has never even looked into—so he says, and one can well believe him—the edition of Réveillé-Parise, or the delightful first volume of Triaire with the early letters; and he appears to be ignorant of the important collection of letters in the Bibliothèque Nationale. One is not surprised at his judgement—"Gui Patin has been abominably over-rated. He is a bore . . . ." It is a pity for M. Pic's reputation that he had not left him alone. Had he devoted a little appreciative study to his author, he might have come to the conclusion of his great countryman, Fleurens, who saw the *man* through all his faults: "Gui Patin has really written nothing but his 'letters': and these 'letters,' in spite of a boldness of view which is sometimes extreme, in spite of language which is often common, in spite of many errors of judgement, of many prejudices against certain men—these letters are a brilliant expression of a proud and lofty soul, and in them he will live, for there is in them what never dies—style. Gui Patin is the most 'spirituel' doctor who has ever written, unless one includes Rabelais, in whom, however, medicine was hardly more than '*la qualité externe.*'"

But the chief object of this note is to make an appeal, to express a hope, that the Paris Faculty will at once arrange for the completion of M. Triaire's edition. Much of the work has been done, and it should not be difficult to find someone with the necessary qualifications. They owe it to the memory of one of the greatest of their deans. When completed, an English edition should be forthcoming. From one of the old editions a translation has already been made by Dr. Blodgett, of Boston, who, at my request, has withheld it from the press awaiting the completion of Triaire's work.

Res Judicatæ

THE RECOGNITION OF PULMONARY TUBERCULOSIS

THAT tuberculosis is terribly prevalent is a fact all must be willing to admit, but while we may wonder at and accept the figures which mortality statistics, autopsy records, and biological reactions force upon us, do we take our impressions of this prevalence, this omnipresence of tuberculosis, and the idea that a probable biological implantation has become of clinical importance into our daily practice? I do not think we do.

Familiar association with many hundreds of consumptives during the last ten years, and intimate knowledge of the histories and physical conditions of most of these, convince me that a considerable percentage of them could have been saved much illness, and probably assured much longer lives, if this point of view of the great prevalence of tuberculosis and the ever-present possibility of such infection had been in the minds of their physicians. It is probable that through familiarity with a family or an individual the suspicions of the physician are not readily aroused, but it is difficult to explain why, very often, when most obvious suggestive symptoms have arisen, the practitioner should ward off the possibility of a reasonably early diagnosis by lulling the fears of the patient, the family, and himself, and creating a feeling of false security. Many families no doubt resent the imputation of tuberculosis almost as an insult, but there are many, also, to-day awakened by popular education to a lively sense of such a possibility. In either case the criticism for delayed diagnosis will surely come, and often with much justice. As a kindness to the patient the day of concealment should belong absolutely to the past. Frankness is the only proper course. At the same time that fears are lulled, the examination, both natural and necessary at such a time, is either not done, or else is done in such a casual manner that it is valueless; the patient is frequently reassured and fears are calmed until finally the diagnosis is forced upon both medical adviser and patient, by which time, very possibly, the patient has consulted another physician or sent his own sputum to a laboratory for examination. Why should the bleeding point in the throat be so frequently found to explain a hæmorrhage which should surely point to most careful inquiry, examination, and prolonged observation in case nothing is found, or to consultation if the practitioner has any reason to doubt the refinements of his methods of physical examination? Why should there be such slight attention paid to the sputum examination of a continued bronchitis, even though the patient himself suggests and even implores that his expectoration be examined; or a case muscularly weak, pale, and possibly with dyspeptic symptoms be so lightly diagnosed as dyspepsia, anæmia, or nervous prostration; or persistent, but variable pain in neck and shoulders be regarded as rheumatism; or a husky-voiced larynx receive such continued and vigorous treatment without a realization of the causes other than local for such a condition? Why also should a slight rise of temperature in the neighbourhood of one degree elevation, of possibly daily recurrence, be of such little moment to many practitioners and so seldom sought? Do the harsh coughs so frequently recurrent in some children, without other symptoms of bronchitis, but associated with fever when the patient has taken cold, and the almost invariable presence of cervical nodes, put us on guard as they should do, even without further examination?

In most instances an open mind and a careful inquiry, with due regard to certain symptoms, in some cases definite, in others indefinite, but just what we have a right to expect from a disease which early manifests itself by the symptoms of a toxæmia mainly affecting the neuromuscular system, will obtain a diagnosis much earlier than can be possible from the methods of physical examination commonly in vogue. Many histories can be adduced to support this view. The diagnosis should, in any case, be fairly determined without waiting for marked physical signs or bacilli in sputum. In addition, thermometry, with frequent observations made by the patient himself, after due instruction, to replace the casual office temperature observation that is not necessarily of any value; the repeated use of the same scales; and the repeated examination of sputum, with no attention whatever paid to a casual negative report, will give good ground for warning or reassurance. It is interesting to note that for 1909, with an estimated ten thousand cases in the province of Ontario, only twenty-two hundred and fifty sputum examinations were done by the Provincial Board of Health Laboratories—and sixteen hundred of these gave negative results. The various hospital laboratories no doubt serve many practitioners, but with the addition of examinations made there and in private laboratories the total number of specimens examined is all too small for the number of patients who should be suspected. The examinations in city laboratories at this time are negligible.

Physical examination of the chest yields such discordant results, varying with the training and care of the examiner, that for reasonably early diagnosis it is, as frequently carried out, quite as likely to lead astray as to be of service. There are of course cases which are obvious, and others so definite that with relatively slight examination the veriest tyro may make a diagnosis, and it is always desirable to have these recognized in order to safeguard others, though the diagnosis may be of little value to the individual concerned. But many moderately advanced cases require care in examination and many incipients extreme care, to say nothing of the probable and doubtful cases. The need of most careful physical examinations is further emphasized by the sensitiveness and discrepancies of the several tuberculin tests which have promised so much, but which, while specific, cannot be regarded necessarily as informative of a clinical tuberculosis without being interpreted along with the clinical and historical data accurately obtained. These tests, while not used as extensively as they might well be, can readily be misinterpreted and prove a source of error, though an error usually in the right direction. Simple, sound, routine examination of the various organs of the body consistently followed will pick up cases otherwise easily overlooked. In the last six months, in a small practice, two cases of cæcal tuberculosis were found which had been overlooked, one by an eminent internist, especially renowned in tuberculosis, and the other by a successful family physician. In neither of these cases was the pulmonary disease relatively of moment, and it is a coincidence that neither case came from Canada.

It is so momentous for the patient that the disease be diagnosed early, that physical examination is of the utmost importance, but the examination to be of value must be a skilled one. Good technique is essential and also a considerable experience of relative values. In all the methods employed the greatest care must be taken to eliminate error, which can so readily creep into any of the procedures used. Both leisure and quiet are essential in difficult cases, and, even after the greatest care has been used, the examiner must often be in doubt, and can only recommend a repetition of the examination after a period of observation. Methods of chest examination ordinarily seen are, in the majority of cases, too crude really to detect early cases or to warrant an opinion excluding tuberculosis. This opinion is, I believe, confirmed by the experience of all men who are engaged in sanatorium work or in practice in resorts for tuberculosis. I may say that I rarely have a truly incipient case referred to me, and that seldom do I fail to find evidence of tuberculosis in other areas than that designated as the site of trouble, and that I rarely have a strictly unilateral case under observation. There may be reasons for this in the nature of cases referred to me, but my more recent experience with a clientèle drawn from the reasonably well-to-do is approximately the same as my earlier experience with patients drawn mainly from a labouring and artisan class. It happens, however, that one man will send a series of relatively early cases, whereas another will send only advanced ones, both, possibly, equally promptly after recognition, so that it is fair to think that cases come to both that are recognizable at an early stage and that difference in method or point of view is responsible for the different stages when the diagnosis is made.

My own experience caused me much chagrin, though it was salutary. After my year's service at the Toronto General Hospital in '95, I went to London. I carried with me that excellent opinion of myself and of my training that ex-house surgeons of that hospital were wont to have, but I soon found that with the stethoscope as well as in other matters of medical education and training, I had much to learn, and a good deal to unlearn. As a matter of fact, I was hopelessly at sea on the chest, both in accuracy of observation and in interpretation, and since then I have been forced to realize that it is only consistent watchfulness that can prevent error or oversight in chest work. While the opportunities for clinical training in general are to-day much better than in the early '90's, it is probable that many young physicians since then have begun practice without more accurate ideas of chest work than I had at the end of the house surgeon's year, and that they have not had the same opportunity to have their errors corrected. It is not then surprising that many cases possible of recognition go undiagnosed until a relatively advanced stage is reached. In the early '90's we saw none but far advanced cases in the wards, and, since these were greatly used for clinical instruction, it was usual for the dramatic changes to be emphasized, and the recognition of cavity became the acme of diagnosis for students. I recollect one or two cases only in the out-patient's department in which early adventitious sounds were demonstrated.

I am told that the opportunity for teaching students tuberculosis in the wards in Toronto is now even less than it was fifteen years ago. With my present conception of the diagnosis of early tuberculosis, I am impressed with the utter impossibility, under the facilities that obtain, of teaching this subject in either wards or outdoor departments, even though the latter clinic is a specialized one. Both leisure and quiet are absolutely necessary, a grouping of cases to emphasize various small points is highly desirable to teach prognosis as well as diagnosis, and the dignity of a special clinic with all proper facilities is needed, both from the point of view of teaching and in order to impress the student with the need of realizing this important subject. With the many dramatic subjects that claim his attention, that student is an exception who will see for himself the necessity of time spent upon this highly important, but undramatic detail. It is inevitable that every teacher will urge the importance of the subject in which he is interested, and time does not give opportunity for great attention to all. If greater importance, however, were attached to the teaching of this highly important but modest subject, internal medicine in general would greatly benefit through the greater refinement in method that the student would have to learn. The recognition and realization of the importance of trifling changes in percussion note or breath sounds are of infinitely more importance for the student's future clientèle than his ability to diagnose a heaving thoracic aneurism or a palpable pyloric cancer.

It is a matter of profound regret to one interested in this subject that the splendid new hospital about to replace the old General makes no provision for two observation wards where suspected cases of tuberculosis might be sent in for diagnosis, and where other cases might be grouped to illustrate various phases of the disease. The recently issued annual report of this hospital shows that there were seventy-six cases of medical tuberculosis under treatment during the year. If these cases were grouped they would be much more available for broad clinical instruction. In a ward especially designed for their accommodation they would serve admirably to illustrate the present hygienic methods of prevention of infection and treatment, and their presence would be invaluable as an object lesson with the view of lessening the phthisiophobia so common in physicians and nurses as well as in the laity. A special dispensary clinic is even more essential. It should be, for hygienic reasons, in a building of its own, complete in all details, in order to facilitate diagnosis, treatment, and teaching. At the same time, it should be a great factor in the broad sociological movement already inaugurated. Such a clinic, for public service as well as for teaching, should ideally be part of the hospital, but for practical reasons it would naturally have to be intimately identified with the municipal health department. This clinical building would emphasize the importance of the subject to the layman and physician alike, and would become, most probably, the centre around which all work, both medical and social, would develop. Containing efficient *x*-ray and laryngological rooms, and also a well-equipped laboratory, which would offer facilities for the use of Caulfeild's interesting serological methods for prognosis and diagnosis, and also for the easy use of tuberculin in diagnosis, it would soon come to be used by the practitioners of the city as an important arm in diagnosis. In a word, it would become an inspiration to more thorough work in general. Such dispensaries should be developed in all centres of considerable size.

With the development of social work and the familiarizing of the public with the presence of tuberculosis amongst them, emphasized by a dignified dispensary, a more common-sense view about tuberculosis than exists at present will develop in most municipalities. There will come to be a rational fear of evil resulting from carelessness and a reassurance when it is recognized that care is taken. It is much to be desired that such a rational idea should speedily be developed by both employer and employee in the interest of the wage-earner to replace the present insane fear. No factor need be greater in the development of this sane point of view on the part of the public than the family physician. Every family he has to deal with should gradually be educated to a realization of the ubiquity and insidiousness of tuberculosis, the methods of prevention, the premonitory symptoms, and the necessity of early medical advice if such suggestive symptoms should arise. The physician should be invariably, as indeed he often is, a family supervisor for prevention as well as treatment of illness. Some increased remuneration will no doubt ensue, though, as a lantern bearer, the knowledge of the brightened glow of his lantern will for a time be his main compensation.

The development of sanatoria in easily accessible, instead of relatively inaccessible places, and the excellent results obtained in them by consistent supervision, has done much to take attention from the real value of climatic change and to develop still further the idea of home treatment in both physician and patient. If the attending physician would thoroughly familiarize himself with the details of supervision, and enforce them, little could be said against home treatment, as it is very often successfully carried out. But the fact that symptoms seem, in early stages, so often relatively unimportant as compared with the familiar acute types of disease, detracts from their real importance in the minds of both physician and patient, and the former is disinclined to emphasize restriction when he should, and the latter to make concession. At home the patient is also deprived of the education and support that he gains in a sanatorium from the experience of others, and these are of material help to him in addition to the training of sanatorium régime.

What is known as "the class system" of treatment with patients living at home gives most excellent results, but this is the consequence of specialized supervision. Recoverable cases have a much better chance, as a rule, in sanatoria. Much to be deprecated, however, is the sending away of patients for change of climate and surroundings where there will be no adequate medical supervision, unless they have already had at least a short period of sanatorium training. Many a bad result drifts to the sanatorium from such an experience, but too late. Physicians are often inclined to be critical of sanatorium results because they do not fully realize the limitation of the terms used for the purpose of record when a patient is discharged, and the results possibly do not come within their conception of the terms. Too much is also often expected when neither the anatomical nor physiological condition present warrants the desired result. A prolonged sanatorium treatment is by no means necessary in all types of cases. A tuberculosis is sometimes of subsidiary importance in those cases in which it is engrafted upon other organic or functional diseases of long standing which are of more importance in treatment. Quite inactive or arrested cases are also sometimes sent to sanatoria, which can safely be returned home after a short period of observation.

The error of gravest importance and one most frequently made in the handling of pulmonary tuberculosis by the relatively inexperienced is the failure to appreciate the full value of rest and to maintain it until even slight activity has quite subsided and the resistance has been considerably increased. Valuable as exercise is after this point has been reached, the too early adoption of it is a distinct loss rather than a gain. The exploitation of exercise as a form of treatment by those scientifically familiar with its effects, in whose hands it may be perfectly safe, is likely to encourage the inexperienced to use it unwisely, and most practitioners, in this country at least, have not yet learned to emphasize rest.

I have been told, when discussing with my friends some of the points referred to here, that I know very little about the difficulties that beset the practitioner in reaching a diagnosis, that cases that are referred to me are already labelled (unfortunately too well in many instances) and that no onus of responsibility rests with me in making the selection, that consequently my views on this matter are one-sided, that I am in the position of the pathologist, so to speak, who has the last laugh at the clinician. I am very willing to admit the practitioner's great difficulty, the many calls upon his time, the services often so poorly remunerated, the many differential points he must consider in the variety of diseases he is compelled to deal with, how often he is right rather than wrong, at any rate in the more acute type of illnesses, and that his familiarity with prevalent types of infection may help him to exclude possibilities which the consultant does not always have in mind. Also that the patient himself is very often to blame, either because of the tardiness of his awakening through the insidious nature of this disease, with which he can long continue to work, or because he may have refused to heed the warnings which his physican has given. I am also quite willing to acknowledge that it is inevitable that any specialism must mean some, even considerable, limitation of one's horizon, both practically and theoretically. Detached as one becomes from the educational opportunities of general medicine, in this special field it is, almost more than in any other, highly desirable that there should previously have been a sound education in internal medicine. We cannot gain detail without some compensating sacrifice, but even so, it is, I think, still possible to keep an open mind, and in doubtful cases be able without prejudice to give a fair opinion.

But, after all, such contentions merely beg the question. The disease is there, and if sought, can be found much earlier than is the rule at present. The experience of the Berlin dispensaries illustrates this, as in one year for every case voluntarily coming to the dispensaries another was found, when looked for, in the household from which that patient came. Bulstrode, in his report to the Local Government Board, quotes Latham as expressing current medical opinion when he says that "the early diagnosis of pulmonary consumption is a question of supreme importance, perhaps the most important which the physician has to face."

The point of view is, in my opinion, the most important thing in helping us as physicians to meet this problem more efficiently. Our efficiency and value depend upon standards derived from our ideals. The point of view, a stethoscope of really good make, and that admirable silent critic of our work, a blue skin pencil, so little used, will make for efficiency and interest where now there may be a lack of both. No Heaven-sent sign will come to help us to diagnose tuberculosis that will be independent of sound clinical investigation.

If we are to do our duty, we must not supinely wait until the diagnosis declares itself. There is little dramatic about tuberculosis except the awakening, after which all is tragic, not necessarily in suffering as much as in the realization of lost opportunity and possibility.

It has not been my wish or intention to make out a case for the consultant or specialist, committed within the broad field of internal medicine to the care of a tuberculous clientèle, but rather to emphasize the view that the family practitioners form the bulwark of protection for the individuals of the community against the inroads of this disease, which is probably implanted in a majority at an early period of life. With this end in view, I have attempted to examine fairly the methods we bring to our daily work, and if they are found wanting, which is a matter for individual personal decision, they should be improved within ourselves, or, if this is not found practicable, help from without must be obtained, if our duty is to be done to those who trust us.

Gravenhurst C. D. P.

Sir James Grant, K.C.M.G., recently attended the centenary of the Academy of Natural Sciences, Philadelphia, as the representative of the Royal Society of Canada. The event was celebrated by many delegates from scientific centres of the world, joined by a large attendance of leading American scientists from the chief institutions of the republic.

Retrospect of Medicine

HUMAN AND BOVINE TUBERCULOSIS

INASMUCH as an editorial was published, October, 1911, in THE CANADIAN MEDICAL ASSOCIATION JOURNAL upon the final results of the British Royal Tuberculosis Commission, it would seem of interest to have the summary and criticism of this report made by Dr. Stabarzt B. Möllers, who occupies Koch's old position in the Royal Institute for Infectious Diseases, Berlin. These have appeared in the *Berl. Kl. Wochenschr.*, 1911, No. 47, and more fully in the *Zeitzschrift fur Tuberkulose*, Bd. XVIII, Heft 2.

During the days in which I had the pleasure and profit of seeing the enormous amount of material at their disposal (in Berlin), and the facilities whereby detail work had been and was being done, I fully realized the attitude felt by these workers, especially over many of the articles adverse to Koch and his work, which appeared in the daily press after the final report of the English commission. Dr. Möllers was kind enough to go over the details of his criticism with me: this was at the time in the form of a galley proof.

Dr. Möllers' treatment of the report of the English commission opens with one of Koch's original statements made in London in 1901; namely, that the human and bovine strains are distinct from one another, and that severe infections due to the bovine bacillus occur but comparatively rarely. It is further pointed out that the English commission based their conclusions solely upon their own results, and failed to mention other investigations along similar lines. A number of these other investigations are included in Dr. Möllers' article in which mention is made of the review of the English Commission's Interim Reports by H. Kossel, in the *Deutsche Med. Wochenschr.*, 1908, No. 5.

The various points of the report are translated and throughout the attitude has been one of sincere regard towards the amount of work done, and only when the conclusions refute, or are said to refute, Koch's statements are the data of the English commission and other investigations brought to close criticism.

In the commission's table of one hundred and eight cases of human tuberculosis, Möllers points out that only forty-two cases of primary pulmonary tuberculosis are given in explanation of Koch's statement at Washington, 1908, that pulmonary tuberculosis, which chiefly is the cause of the spread and mortality of the human race, is caused not by the bovine, but by the human bacillus. Of these forty-two cases there were fourteen, which were determined by post mortem material, while twenty-eight cases were sputum investigations, upon which later Koch had laid special stress, as the spread of the disease took place chiefly through the sputum of the phthisiker. In contrast to the commission's forty-two, there are cited Dieterlen's (Berlin) results with fifty cases, Kitasato's (Japan) on fifty-two; Kossel's (Heidelberg) on forty-six; the author's (Berlin) on fifty-one, and the results of the health department of the city of New York on two hundred and ninety-one, in which the sputum was investigated culturally. Of the forty-two cases of the English commission, but two were found to be due to the bovine bacillus; both ocurring in the lot investigated through the sputum. The history of both cases is closely criticized and mention made of the fact that the last four and six months of life, respectively, went without investigation, and that no post mortem was obtained. The inference probably was that there might have been a mixed infection, which might have shown up towards or at the end. Möllers' remarks that even this percentage, namely, two out of forty-two, cannot alter the truth of Koch's statement, and proceeds by stating that, including the forty-two cases of the English commission, there are seven hundred and nine similarly investigated cases in the literature.* Out of this number are the two cases of the English commission, and one doubtful reported by Jong-Stuurmann, due to the bovine bacillus, while in one case Kossel found a mixed infection of both bovine and human strains.

Twenty-nine cases of the one hundred and eight were instances of abdominal tuberculosis, of which thirteen were occasioned by human, fourteen by bovine, and two by both human and bovine strains. With this data the English commission supported their conclusion that a considerable number of cases of tuberculosis in childhood must be ascribed to the bovine bacillus. This is criticized in that Möllers states that with these data the conclusions are justified, but that the number is too small, without further work, to guarantee that these relations obtain in general. In defence of this criticism Weber's results are adduced (*Tub. Arb.* a. d. K. G. A. 1910, Heft 10), which, including thirteen cases of the English commission, totalled sixty-six cases of tuberculosis in children, and six of adults due to the bovine bacillus. To this assemblage of Weber's but few have been added subsequently. Here it is further to be

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*Robert Koch, *Stiftung*, Heft. 1, and *Deutsche Med. Wochenschr*, 1911, No. 43.

remembered that to a great extent the material had been selected from cases suspected to be due to bovine infection, and that only through routine and unselected material, supported by post mortem, can the true relation between the bovine and human strains be established.

Such investigations were undertaken by Gaffky in the Berliner Institute for Infectious Diseases a year ago and continued by Rothe, whereby four hundred children were investigated at post mortem. By inoculation of guinea pigs with mesenteric and cervical glands seventy-eight cases (19·5 per cent.) were found to be tuberculous, in which the agent in 96·15 per cent. of the tuberculous, and 18·75 per cent. of all the investigated cases was found to be confined to the human bacillus; in 3 per cent. of the tuberculous and ·75 per cent. of all cases was a bovine infection demonstrated. This investigation showed, further, that the portal of entry was chiefly by way of the respiratory organs. These results of Gaffky and Rothe support entirely Koch's statement that for childhood the significance of the bovine bacillus is a very minor one in comparison with the danger that the human threatens. Thus the findings of the English commission, on account of the method of their selection of and the smallness of the number of investigated cases, are not in a position to refute Koch's view.

Attention is drawn to the work done upon twenty cases of lupus, in which but three cases could be typically labelled, two strains being human and one bovine. The remaining seventeen are found to divide themselves into two groups, one of eight and the other of nine cases, each group showing peculiarities. Koch's work on forty cases of lupus is mentioned but not detailed in either publication. This is, however, implied for the next publication of the Robert Koch-Stiftung.

The remaining points of the English reports are well summarized before the answers to the three questions, with which the commission had to concern itself, are taken up.

Regarding the second question, namely, whether animal and man can be reciprocally infected, Möllers finds the conception of Koch and the English commission to be in agreement.

The third question is, under which conditions, if ever, does the transfer of infection from animal to man take place, and which conditions favour or hinder such transference? This important answer is again dealt with in considerable detail, particularly that part which concludes that by the means of milk a considerable number of cases is occasioned in childhood. The number of the commission, that is, thirty-nine cases of tuberculosis of abdominal organs and cervical glands, is not sufficient to offset the results of others, particularly those of Gaffky and Rothe, in which the proportion between bovine and human showed marked difference from those of the commission.

If the relation between human and bovine, as found by the commission, represents the truth for all, then this high percentage of bovine infection should have a marked significance in adult life, which is not found to be the case. (This argument must be based to a great extent upon one's conception as to whether exaccerbations in later life leading to clinical tuberculosis are true autoinfections, autoinfections induced by reinfection from without, or true reinfections from without.)

The further argument of the commission that whatever the animal source of tuberculosis for adolescence and adults may be, there can be no doubt that a considerable number of cases of tuberculosis in children are occasioned by bovine infection, and that these are occasioned by the ingestion of infected tuberculous material, which conditions advise energetic regulations guarding against the danger of transference of bovine bacilli from tuberculous cows (whether the lesion is in the udder or internal organs) through the means of the milk, and that these regulations must eliminate the possibility of milk supply from such cows. This argument, with its consequent enactments, Möllers finds in harmony with Koch's attitude, but exception is taken again to the extent of the danger. This extent is outlined from the results of the investigations instigated by Koch from 1905 to April, 1909. This comprised the data obtained among six hundred and twenty-eight people, including two hundred and eighty-four children, who had drunk, in the main for long periods of time, milk from one hundred and thirteen cows reported with udder tuberculosis. From this material it was definitely ascertained that raw milk or its products had been used in sixty-nine cases of udder tuberculosis by three hundred and sixty individuals, of whom one hundred and fifty-one were children. Of these, but one child in two families showed cervical gland involvement. In these two infants the course of the disease was mild, which is again contrasted with the usually fatal termination of the infection, where this is due to the human bacillus.

The concluding paragraphs state that the teaching of our memorable master, Robert Koch, namely, that the cause of human and animal tuberculosis is distinct, and that in the fight against tuberculosis the chief aim must be towards preventing the transference from man to man, and further that these teachings have been overthrown in no way by the results of the English Royal Commission, as one might imagine from many of the articles which have appeared in the daily press. The investigation results of the commission only strengthen the opinion of the German workers of the truth of Koch's conceptions.

A more recent article by Park and Krumwiede (*Journal of Med. Research*, xxv, 2, 131) gives, together with Möllers' criticism, such complete and exhaustive data and results on this aspect of tuberculosis, that the relative importance of the human and bovine types of tubercle bacilli in the different forms of human tuberculosis seem to be finally settled.

A. H. C.

A MARKED decrease in the number of cases of scarlet fever in Toronto during the month of March is shown as compared with 1911. In March last year there were four hundred and forty-one cases, this year there have been one hundred and sixty-three. Twelve typhoid cases were reported during March this year, while fifty-eight occurred during the same month in 1911. Only two cases of measles have been reported during March this year, as compared with eighty-seven during the same month last year. No cases of tuberculosis have been reported this year, but seventy-two were reported in March last year. On the other hand, diphtheria shows a considerable increase, one hundred and fifty-seven cases being reported this year as compared with one hundred and one during the same month last year.

Obituary

Dr. Munger, of Rodney, died March 14th, in his eighty-second year. Dr. Munger was a native of New Brunswick, but went to Western Ontario soon after he graduated. He was closely identified with the town of Rodney for many years. A few years ago Dr. Munger retired from active practice as a physician and went into the drug business, which he conducted until five weeks before his death.

Dr. J. D. Thorburn died at Guelph on March 26th, after an operation for appendicitis. Dr. Thorburn, who was the son of the late Dr. Thorburn, of Toronto, was a graduate of Toronto and afterwards took post-graduate courses in Vienna and Edinburgh. He was a member of the College of Physicians and Surgeons, and was on the staff of several of the Toronto hospitals. His practice as a specialist in diseases of the nose, ear, eye, and throat was a large one. Dr. Thorburn is survived by his widow, a daughter of Sir William Meredith, and four children.

Dr. E. Pearson James, of Galt, was found dead in his office on March 27th. Death was due to heart disease. Dr. James graduated in Toronto in 1902, and was a member of the Ontario College of Physicians and Surgeons. At the time of his death he was thirty-three years of age.

Dr. J. Horace Crepault died March 25th, in his sixty-third year, after a long illness. Dr. Crépault was born at St. Louis de Kamouraska and graduated at Laval University in 1870. He practised at Saint Pascal and in Montreal for many years.

Peterborough lost one of its most prominent physicians in the death of Dr. R. P. Boucher, which took place on March 16th. Dr. Boucher was for some years a member of the provincial board of health and was president of the medical society. He also served on the board of education. The deceased took an active part in all social organizations and was particularly interested in athletics: he was president both of the Peterborough Curling Club and the Peterborough Lawn Bowling Club. He was the son of Judge R. M.

Boucher. He studied medicine at Victoria College, Toronto, after which he spent some time at Belleview Hospital, New York. Dr. Boucher was sixty-four years of age.

Dr. R. N. Luton died at London, Ontario, on March 18th. He was sixty years of age, and had practised for many years in Grand Rapids, Michigan.

Dr. J. W. Wright, of Picton, died February 29th, in the fifty-sixth year of his age.

Dr. George F. Rymer died at Fort Resolution, N.W.T. Dr. Rymer was a medical missionary at the above post for many years.

Dr. F. S. Yorston, of Truro, died in Florida.

Dr. Ulric Lafontaine died at Manchester, N.H., in the twenty-seventh year of his age. Dr. Lafontaine was a graduate of Laval University, and was the nephew of Judge Ulric Lafontaine.

Dr. Finlow Alexander died at the Hotel Dieu, Montreal, March 28th, in the seventy-ninth year of his age. Dr. Alexander was born in Devonshire, England. After studying medicine he came to Canada, where he practised for ten years. He then left the medical profession and became a minister of the Anglican Church. In 1894 Dr. Alexander entered the Roman Catholic Church, and the latter part of his life has been spent in strict retirement in Montreal.

News

A bill has been introduced in the Ontario legislature, which provides that no hospital receiving provincial aid shall refuse to admit a patient suffering from tubercular disease; that all private hospitals must be licensed and must pay a fee of $5 a year; and that public hospitals shall not charge a municipality or an employer more than one dollar a day for any patient treated in that hospital.

A SERIOUS outbreak of small-pox has occurred in St. Agapit. The disease first made its appearance in the local convent. A medical officer was at once called in and the case diagnosed as small-pox. The health authorities, however, were not notified and no precautions were taken to prevent the spread of the disease. As a result, fifteen days later, thirty cases of small-pox had developed in the neighbouring community. The matter has been taken up by the provincial board of health. Strange to say, the doctor who neglected to report the initial case of the disease has since been appointed sanitary inspector for St. Agapit.

A CASE of small-pox is reported from Meductic. The young man affected had just returned from Regina. A case of the disease has also occurred in Sarnia.

A CASE of leprosy has occurred in Toronto. The victim is a Chinese boy of thirteen years of age, who has been in this country for three months only. He was an inmate of the Toronto General Hospital for some weeks, but has since been deported to the leper colony of Tracadie, in New Brunswick.

SMALL-POX is reported from Moose Jaw, half-a-dozen cases having been removed to the isolation hospital. Two cases have also occurred in Toronto.

OVER fifty cases of scarlet fever are reported from St. John's.

WHOOPING cough is very prevalent in Amherst. Many young children have had bad attacks of this disease.

THE new general hospital at Port Alberni is to receive a special government grant of $5,000.

THE nurses at Portage la Prairie Hospital have been successfully inoculated against typhoid fever, giving immunity for one year.

FREE eye, ear, and nose clinics are now held every Tuesday and Friday at the General Hospital, Regina. A free clinic in medical and surgical diseases is held daily, except Sunday and legal holidays, from 2 to 3 o'clock p.m. A nominal admission fee of ten cents is charged; also a fee of ten cents for medicines and prescriptions.

A SLIGHT epidemic of small-pox is reported from Fernie, B.C.

FIFTEEN cases of typhoid have been reported in Bordeaux. An analysis of the water is to be made and a filtration plant established.

DR. THOMAS MCCRAE has been appointed professor of medicine in the Jefferson Medical College of Philadelphia. This professorship has been held for many years by Dr. James C. Wilson, who has recently resigned. Dr. McCrae is a Canadian by birth and a graduate of Toronto University. He has been connected with the hospital and teaching faculty of Johns Hopkins University for the last sixteen years.

THE *Scottish Medical and Surgical Journal* has amalgamated with the *Edinburgh Journal.*

A NEW hospital will shortly be erected in Edmonton. It is to be situated in the grounds of the University of Alberta. The plans for the new building were discussed at a recent meeting of the hospital board.

AN outbreak of small-pox is reported from Courtwright. Fourteen cases are under quarantine at St. Clair, Michigan, just across the river. All precautions are being taken and every one in Courtwright is being vaccinated.

DR. G. H. COWAN has been appointed medical health officer of Napanee.

A NEW hospital for Orillia is under consideration. It is to be erected on the site of the present hospital and will accommodate fifty patients. The estimated cost is about $50,000.

DAVIDSON is to have a hospital. The cost of the building is estimated at about $20,000. It is proposed to lease the hospital for a term of three years to the Victorian Order of Nurses.

SEVERAL cases of small-pox have occurred in Saskatoon, Moose Jaw, and in a farming settlement ten miles north of Suffield, Alberta. Cases of this disease are also reported from Joliette, and St. Henry of Levis, Que.

The Vancouver Medical Association held a clinical meeting at the General Hospital on February 27th. Dr. Grenfell, of Labrador, was entertained at the University Club on March 2nd. The regular meeting of the association took place March 11th.

Twenty-seven cases of typhoid have occurred in Port Hope. The epidemic is thought to be due to the water.

A serious outbreak of measles is reported from Upper Island Cove, Newfoundland. As many as one hundred and fifty cases have occurred in the village, and there have been several deaths.

Competitive examinations for the purpose of selecting ten district sanitary inspectors will be held in June at the Montreal office of the provincial board of health. Candidates must be physicians holding diplomas of public health. With the object of training such men, special courses in public health have been organized at McGill and Laval universities.

A commodious new hospital is in course of erection at Mount Coquitlam, B.C. The hospital, when completed, will consist of a series of buildings, one of which is now nearing completion. This building will accommodate six hundred male patients, and, it is expected, will be ready for occupation the end of July.

The city of Toronto has been divided into fourteen health districts, each of which will be in charge of an inspector under the supervision of Dr. Hastings.

Dr. W. H. T. Peake, of Transcona, has been appointed coroner in the province of Manitoba.

Dr. W. R. Gordon was fined $50 and costs for practising medicine at Duck Lake without a license.

The new wing of the Toronto Isolation Hospital will accommodate one hundred and twenty-five beds. The opening is to take place on the first of May.

The provincial government of British Columbia has granted the sum of $10,000 to the West Coast General Hospital.

THE establishment of a new hospital in the mining district at Porcupine is under consideration. It is reported that a fund of $10,000 has already been set aside for this purpose.

BOWMANVILLE is to have a hospital and a most generous response has been made to the appeal for funds. It is to be situated on the South Park property, which has been given by Mr. J. W. Alexander, of Bowmanville.

A HOSPITAL is to be established at Weyburn, Saskatchewan, at a cost of $110,000. The site has already been secured.

THE fourth International Congress of Hygiene will meet in Buffalo in August, 1913. Emeritus Professor Eliot, of Harvard University, is to be president, and Sir James Grant honorary vice-president.

Canadian Literature

ORIGINAL COMMUNICATIONS

The Canadian Journal of Medicine and Surgery, April, 1912:

Physical and Mental Training in the Treatment of Nervous Diseases . .	B. E. McKenzie.
The Treatment of Appendicitis other than Operative	G. T. McKeough.
Trade or Occupation Dermatitis .	D. King Smith.

Le Journal de Médecine et de Chirurgie, March, 1912:

De l'ensiegnement de l'ophthalmologie en Allemagne	G. Morin.

Le Montréal Médical, March, 1912:

Polynévrites alcooliques	Dr. Déjerine.
Les nouvelles méthodes pour le diagnostic étiologique des gros foies . . .	Dr. Castaigne.
Régles à suivre pour établir le régime des albumineuiques	M. Springer.

The Canada Lancet, March, 1912:

Ulcer of the Stomach and Duodenum	W. J. Macdonald.
Imperforated Rectum	John Ferguson.
Appendectomy on Shipboard	E. Bryceson.

Public Health Journal, March, 1912:

Physiological Observations on Men's Wearing Apparatus for Saving Life in Mines	David Fraser Harris.
Some Early Garden Talks	Rachel E. Todd
Progress in Canada in Biological Methods of Sewage Disposal During the Last Twenty Years	Willis Chipman
Necessity for Preservation of Food Products by Cold	P. H. Bryce.
Some Recent Advances in Medical Inspection	Mrs. N. C. Smillie.
Hygiene Laboratories in Military Camps	Major H. W. Jacques.
The Control of a Scarlet Fever Epidemic and Its Difficulties	T. A. Whitelaw.
Pertinent Repetition: An Education Requirement	Walter S. Cornell.

Western Canada Medical Journal, March, 1912:

The Technique of Ileo-Sigmoidastomy	Ernest A. Hall.
Elevation of Temperature—An Early and Often Enduring Symptom of Hyperthyroidism	Heinrich Stern.
Ships' Surgeons and Medical Inspection of Immigrants	J. D. Pagé.

Dominion Medical Monthly, April, 1912

The Crime of the Century	A. C. E.
Methods of Diagnosis of the Nature of Glandular Enlargements at the Root of the Neck	O. C. Gruner.

Report of a Case of Acute Appendicitis, Illustrating the Value of a Differential Leucocyte Count . . . . . J. P. Kennedy.
A Plea for Thorough and Systematic Study of the Materia Medica and Therapeutics . Finley Ellingwood.

Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The eleventh regular meeting of the society was held March 1st, 1912, Dr. J. M. Elder, president, in the chair.

Paper: The programme consisted of an address on "Inflammatory Cysts and Cancer of the Breast," by Dr. Oskar Klotz, Professor of Pathology in the University of Pittsburg.

Discussion:

Dr. G. E. Armstrong: I would like to congratulate Dr. Klotz upon the excellence of his paper. I suppose there is nothing that is exercising the profession to-day more than the question of carcinoma, particularly its cause. I do not know that there is any subject studied so thoroughly and so widely, and by so many trained men, as this very subject, and still when we approach it directly we feel that very little has been added to our knowledge of the subject, that is, to make us more able to deal with it in a satisfactory way. The theories put forth are all very interesting, and a good deal can be said about them all. The side that appeals to the clinician very largely is that it is due to, or follows, irritation. It follows a recurring irritation of a mild character, and I think that something else occurs, and that is, the cells that are changed into cancer cells must first be injured. It seems to me that if I can define it at all it is a recurring or repeated mild irritation of a damaged cell: I think it is Keen who has said that there is no case of carcinoma of the skin known that did not develop in injured tissue, and I think it is coming to be felt by operators that there is an injury in most instances deciding the locus for the commencement of that growth. In cancer of the stomach the earlier we get the case the more it appears evident that the carcinoma would appear to start in some lesion of the stomach wall, very often an ulcer. And in one case where I removed the pylorus, benign ulcers and an ulcer in which the carcinoma was developing in the early stage were found side by side. As to the energy of the cells and the potential energy remaining when they cease to perform their function, the theory does not appeal to me so strongly. After the functional activity has ceased there is a surplus of energy which shows itself in the development of these new growths. I think Dr. Adami thought at one time that that had a good deal to do with it and wrote an article on the habit of growth. That may be so, but at the same time I thought that the metastases were against it being a habit of growth. The question is, I think, still, as Dr. Klotz puts it, that at the bedside our powers are to be expended in the early recognition of the disease, while it can be removed wholly, and before any metastases have occurred, and also in the removal of those conditions which have been alluded to as precancerous, or conditions in which a carcinoma is likely to develop, lesions of the stomach walls, lesions of the lips, and in certain cases, perhaps, of the tongue.

Dr. F. J. Shepherd: I should like to congratulate Dr. Klotz on the valuable paper he has given us. I have come to the same conclusion, that in the majority of cases there has been some irritation and inflammation preceding the cancer. Years ago, chimney sweep's cancer of the scrotum was a common occurrence, but this cancer was abolished by Act of Parliament when sweeps were forbidden to go into chimneys. In India there is a well recognized cancer of the abdomen caused by the irritation produced by charcoal braziers which they apply to their stomachs. With regard to cysts of the breast, whenever I suspect a cyst I make an exploratory puncture with the needle, and if the fluid comes away clear I leave it alone, but if bloody fluid comes away I recommend operation at once, especially in those over thirty-five years of age. It is safe to take every tumour out of the breast after this age.

Dr. E. W. Archibald: I think I do not venture too much when on behalf of the younger men present I rise to congratulate Dr. Klotz on this able address. We who were his comrades are particularly pleased to find him come back a known man, and we are particularly pleased with the ability of the address which he has given us. With regard to what Dr. Koltz has said, I was interested in one point in particular, and that was the passing reference to the work in his laboratory along the newer lines, of the growth of tissue *in vitro*. While in New York, I paid a visit to the Rockefeller

Institute, and was fortunate enough to see Carrel and his assistants at work upon their experiments in this line. At the time, the composition of the fluids in which the tissues were grown was, we understood, of a most particular nature, and the conditions to be fulfilled quite exacting. When I hear Dr. Klotz say that he has grown tissue of a great variety in such solutions as Locke's and Ringer's, I feel that that must represent a step in advance.

Concerning his remarks about the early diagnosis of cancer of the breast, Dr. Klotz is clearly to be congratulated upon securing one of the earliest known cancers in the specimen to which he referred which measured only one-half cm. It is really a find, and I can remember no other specimen mentioned in the literature of so early a growth, except, perhaps, that of Henser, in the stomach. Henser's examination of that specimen would also seem to show that the Ribbert theory of primary fibrous stroma overgrowth and secondary epithelial growth was wrong, and that it was more often primarily in the epithelial tissue that the neoplasm originates. The early diagnosis of cancer of the breast must be always an extremely difficult one. There is a large number of early cases in which the clinician expects the pathologist to give him an answer, yes or no; and such cases are extremely difficult, especially in the border-line cases. The old criterion has yet to stand, and I should like to make this consist simply in the one point of invasion of the basement membrane by the growing epithelium. It is extremely difficult to advance our knowledge along these lines because of the fact that the pathological diagnosis in the doubtful cases must remain dubious until after the course in the patient makes the matter clear. And so often the removal of the growth with permanent cure leaves the matter still in doubt. In passing I might raise a small protest against the current use of frozen sections for the examination of cases in which there is any doubt.

Dr. A. E. Garrow: In rising to express my appreciation of Dr. Klotz's paper, I should like to ask one or two questions which to my mind are of great clinical interest. The microphotographs which Dr. Klotz has shown remind me of a specimen which Professor Ashoff exhibited to his laboratory workers some eight years ago. The breast had been removed by Professor Braun and the histological diagnosis of fibro-cystic disease had been made. Some months later metastases developed, and a more careful examination of the slides revealed a small area of malignant growth. I should like to know if the specimens shown here to-night depicting non-malignant and malignant growth were obtained from the same breast.

Secondly, I should like to ask Dr. Klotz if he has seen malignant cystic disease of the breast bilateral. The so-called interstitial mastitis is frequently bilateral and is not likely to be mistaken for malignant disease, but when limited to one breast, it is apparent from Dr. Klotz's studies that an absolute diagnosis can only be made after an exhaustive examination of numerous sections.

Dr. W. W. Chipman: I was in Pittsburgh some three days ago, and saw Dr. Klotz at work in his laboratory, and I would merely like to say that I was very much impressed with the quality of the work which he is carrying out there. In a position which at the beginning was rather difficult, he has succeeded very wonderfully in unifying and in drawing together the work of several large hospitals. One or two points of the paper to-night stand out conspicuously. The first point is that the tendency of the paper is to show that the progress of our knowledge is towards simplicity, that after all there is a great mystery of cell life, but the mystery associated with the conditions of cell life are largely being cleared up. Practically Dr. Klotz has told us that cells will grow if two things are supplied to them, namely, moisture and warmth. I saw the other day an instance in a German paper where an observer took early embryos, in the case of mice and rats, and simply minced up these early embryos and introduced this mince into the peritoneal cavity of the adult with the result of the formation of a teratoid tumour in the peritoneal cavity. This shows that under these conditions even when the early cells are severely injured, certainly they were finely separated, yet these cells grew in the peritoneal cavity. I feel again that we are much indebted to Dr. Klotz for this very interesting address.

Dr. Fraser B. Gurd: I am delighted to hear Dr. Klotz classify in this simple way tumours or lumps of the breast, according to a system that can group these masses as 1, 2, 3, and 4, in which there is a relationship between the various pictures histologically and the various tumours presented macroscopically and clinically. The tumours which are classified as the adeno-papillo-cystomata or the tumours of the third group, are extremely interesting. Tumours of this kind are those which are difficult to diagnose; they are a class fairly well represented, but inasmuch as a certain percentage of tumours which for the most part present that type do demonstrate malignant qualities, it is extremely difficult in an individual case to make a definite diagnosis. I feel that the element of trauma in determining the malignant habits of growth in these tumours, as suggested by Ribbert, is of more importance than Dr. Klotz believes it to be. For my own use I have termed tumours of both these classes potentially malignant, and I believe that the cells have developed the power of growing when allowed to escape beyond their basement membrane through injury or irritation. I term these tumours potentially malignant, and as such have made a custom of reporting them, allowing the burden of proof to fall upon the clinician.

Dr. L. J. Rhea: I have been very much interested in many things that Dr. Klotz has said. One thing in particular impresses me. We are placing the cells of the body more on a matter of fact basis and taking away from them the old idea that there is something supernatural about them; that they cannot grow and cannot multiply unless they are in the body and at a given place in the body. The recent work done in Dr. Klotz's laboratory on the growth of tissue in media tends to change our conception of cells as a whole. The question of the relation of cysts of the breast to cancer is another important point that Dr. Klotz has referred to. Cysts of the breast by many have simply been looked upon as accidental formations, in so far as their epithelial lining is concerned; that is, the epithelial lining plays no essential part in them. I believe that not only the interstitial tissues of the breast, but the lining of these cysts are both important. I know of no lesion that is more difficult for the pathologist to make a differential diagnosis between malignant and non-malignant than the papillomata of the breast. In cysts of the breast where there is macroscopic hæmorrhage in the cyst, when called upon to express an opinion at the time of the operation, I have made it a rule to call these tumours potentially malignant and have advised that the breast be completely removed. This holds good not only for the type of cyst cancer, but also in those papillary forms where finger-like processes grow into the cyst. In breasts which show a number of tumours it is a rule in our laboratory that all these masses shall be examined, because some of them may not show malignant change while the last one may, and unless one examine them all he is scarcely in a position to state whether or not one is dealing with a malignant or a non-malignant tumour. Another thing that Dr. Klotz referred to is the question of what the clinician expects of the pathologist when only small bits of tissue are sent to him for hasty examination. I have recently gone to the operations myself when a question of malignancy or non-malignancy was to be differentiated between at the time of operation, so I can see where the tissue is taken from, and besides this, one always gets a larger piece for examination when one is there and asks for it than when one is not.

Dr. Oskar Klotz: I heartily agree with Dr. Rhea, that in examining breasts suspected of malignancy, every part of the organ must be gone over carefully and fair sized portions of tissue removed for examination. It is most difficult for the pathologist to gain a proper understanding of diseased processes in small portions of tissue sent to the laboratory with insufficient data. If there are any nodular or aberrant looking masses in the breast, each must be examined and examined thoroughly.

In my discussion of the reaction of cells to stimuli, I have attempted to measure their activity in terms of available energy. The character of tumour cells, I view as an alteration in the manner in which cells use their energy. If you consider the various cells of our body from a physiological point of view, you gauge it by the nature of the work which it performs. When analyzed more closely, this work is directly dependent upon the available energy of its nourishment. Not alone does the amount of energy brought to the cell alter its work, but the character of this nourishment plays a very important part. Just that ability which a cell displays in utilizing its nourishment in one way or another, I indicate in terms of energy.

We have had some interesting results in observing the growth of the beating heart *in vitro*. Here we have found that the cells are mainly occupied in gaining sufficient nourishment and energy for their multiplication, and that they apparently have little energy left for carrying out their function. The newly developed heart cells do not beat.

The small cancer, which I mentioned in my paper, was a remarkable one for its size. It has excited the interest of several laboratories and it appears to be one of the earliest tumours observed. The case occurred in the wife of one of the surgeons and its early stage was recognized only on account of the acute interest of both parties.

In cases of bilateral cystic mastitis, it is possible that a malignant condition may occur on both sides, but we have had no experience with such a condition. In the majority of instances, although the cystic disease is probably present in both breasts, tumour commonly arises on one side. For the intermediate type of tumour in which an accurate diagnosis of malignancy cannot be made I have no name to suggest.

HURON MEDICAL ASSOCIATION

The Huron Medical Association met at Wingham, March 13th. The meeting was an interesting one, being marked by the celebration of the jubilee of the oldest practitioner in the county, Dr. J. E. Tamlyn, of Wingham. Dr. Tamlyn has now been in the medical profession for fifty years. Unfortunately, owing to an accident which he suffered a short time ago, Dr. Tamlyn was unable to be present at the meeting. The members, therefore, visited Dr. Tamlyn at his residence and presented him with an address as a tribute to the work accomplished during his professional career and a proof of the affectionate regard and high esteem in which he is held by those of his *confreres* with whom he has laboured for so many years.

OTTAWA MEDICAL SOCIETY

At a meeting of the Ottawa Medical Society on February 10th, Dr. Howard Fox gave a lantern demonstration of the various forms of cutaneous syphilis. He then discussed some of the advantages and disadvantages of salvarsan in the treatment of the disease. Dr. Fox considered the intravenous method of administration to be the better one. Indeed, like the majority of physicians in New York, he had practically given up the painful and disagreeable method of intramuscular injection.

If properly performed, there should be no local disturbance from an intravenous injection except possibly the formation of harmless nodules in the vein, which generally disappear in a short time. It was decidedly preferable to introduce the needle through the skin instead of cutting down upon the vein, as in the latter case a compromising scar was left. In giving the injection it was necessary to watch the needle carefully to avoid puncturing the vein a second time and to allow some of the fluid to infiltrate the tissues. The escape of a few drops of salvarsan was never followed, in Dr. Fox's experience, by any sloughing or serious effects. It was always necessary to be ready to withdraw the needle at once in case the patient complained of a sharp, stinging pain. This was always the best indication that the fluid was not running properly in the veins. On this account it was absolutely wrong to attempt an intravenous injection under a general anæsthetic. Other indications that the injection was not being properly given were the appearance of a lump about the point of the needle and the warning from the assistant that the fluid was not running from the reservoir.

In all of his cases Dr. Fox had used the simple modification of the gravity apparatus reported by him in conjunction with Dr. Trimble in the *Medical Record,* March 11th, 1911. He dispensed entirely with salt solution and used sterile distilled water for making the necessary dilution. For a long time he had allowed the patients to go home immediately after the intravenous injection. He had never seen any ill effects whatever resulting from this practice.

CAPE BRETON MEDICAL ASSOCIATION

A MEETING was held in Sydney on March 16th, with the purpose of forming a clinical society composed of the medical men of that city. The chair was occupied by Dr. J. K. McLeod. It has been found difficult for doctors residing in other parts of the country to attend meetings of the Cape Breton Medical Association, held in Sydney. Clinical societies are to be formed, therefore, in the following centres: North Sydney, Glace Bay, and Sydney. These societies will hold regular meetings, but will not interfere with the work of the association.

NOVA SCOTIA MEDICAL SOCIETY

THE annual meeting of the Nova Scotia Medical Society will be held at Truro, July 3rd to July 4th. At this meeting the question of affiliation with the Canadian Medical Association will be considered.

SOUTH WATERLOO MEDICAL ASSOCIATION

A MEETING of the South Waterloo Medical Association took place on April 3rd. The following officers were elected: President, Dr. C. R. Cumming; vice-president, Dr. McEwen; secretary, Dr. Buchanan; treasurer, Dr. Wardlaw.

OTTAWA MEDICO-CHIRURGICAL SOCIETY

THE annual meeting of the Ottawa Medico-Chirurgical Society was held on March 30th, 1912. The officers elected were: Honorary president, Sir James Grant; president, Dr. J. D. Courtenay; first vice-president, Dr. J. R. O'Brien; second vice-president, Dr. J. F. Argue; secretary, Dr. T. W. C. Mohr; treasurer, Dr. A. S. McElroy; librarian, Dr. Charles Preston; curator, Dr. W. S. Lyman; council: Drs. Brown, Cousens, Small, Gibson, I. G. Smith.

SHALL *water closet*, a term so acceptable to civilized man that it has been welcomed to the vocabularies of almost all modern languages, give way to *toilet*? Surely physicians who carry the principles of asepticism into the practice of speech and abhor impurities in their mother tongue, may still accomplish something by making a stand against the squeamishness of female patients and nurses upon whose lips the offender is oftenest heard. The last straw in my own tolerance came the other day in the shape of a circular issued by a State Board of Health over the signature of its secretary, a physician, in whose virile mind a spade is usually that and nothing else. This was the shocking clause: "Plenty of running water, soap, convenient *toilets* to receive the dejecta from the patients." A water closet, night stool, bed-pan, urinal, privy, dejection—for the new word seems to connote all these things—are not and never can be a *toilet* by any stretch of metonymy. Time was, and not so long ago, when one might speak of a lady as being at her toilet without risk of ambiguity. Now the word is apparently tabooed except when used in a mealy-mouthed attempt to æstheticize an uncompromising act of nature.

> "Immodest words admit of no defence
> For want of decency is want of sense."

But there is nothing more immodest than false modesty, and the offence against decency is aggravated a hundredfold when in addition violence is done to the genius of our English tongue. When Pope wrote:

> "The merchant from the exchange returns in peace
> And the long labours of the toilet cease,"

there was no thought in the poet's mind of protracted travail at stool, which interpretation, if we are not careful, may one day be read into the couplet.—B. C. A. in *Albany Medical Annals*

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THE EFFECT OF ANATOMICAL AND IMMUNOLOGICAL DATA UPON OUR CONCEPTION OF THE TUBERCULOUS

By Alfred H. Caulfeild, M.B., Gravenhurst

EVER since the time of Villemin, but especially since Koch's work, tuberculosis, pulmonary and non-pulmonary, has been the subject of such extensive investigation and observation that one feels that any further remarks of a general nature are chiefly a tax on the patience of any meeting. Where so much attention has been given—as in tuberculosis—it is necessary that the different lines of enquiry become highly specialized. Thus the chemistry of the tubercle bacillus, and of the exudates it may cause, often seems of little practical value because of its chemical nomenclature: the biological investigation of the bacillus and its clinical host is wrapped up in the language of the immunologist: even the physical signs often need the post mortem room and the laboratory of the physicist for their correct interpretation.

The practical results obtained on reading an article, for example, on the chemistry of the tubercle bacillus, often depend upon whether we do this merely to obtain information or to get positive results, or even a clue to some point upon which we need aid in furthering our own ideas.

From the different enquiries there have resulted a number of points which are of practical value to the physician who concerns himself with—What shall be done to prevent the apparently normal from becoming clinically tuberculous, what is the practical significance of a positive and a negative tuberculin reaction in the different years of life, shall the non-tuberculous be artificially immunized, how can we detect the earliest stages of the clinically

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An address delivered before the Academy of Medicine, Toronto, February 6th, 1912.

involved, when and how shall the tuberculous be handled, can a rational basis be evolved for the administration of tuberculin, and other similar points.

The field thus embraced is so large that there is considerable difficulty in keeping to the view outlined by the title without detailing too much of what is already generally recognized. Under this consideration I want to draw attention to some of the later post mortem findings which have been obtained, especially in children; and to show that tuberculous implantations frequently take place without producing tuberculosis, that a continuous study of the various antibodies aids the diagnosis, checks and aids the physical examination and the general handling of the case; finally, I wish to emphasize that the study of these antibodies has already given results which, however, do not begin to compare with the field of possibilities which has thus been revealed.

It is my regret that time forbids a closer correlation of the physical signs and symptoms as found in the individual case. There will be many facts which are well known that I must of necessity bring out. For these I must crave your indulgence. Following the demonstration of the high percentage of tuberculosis in adults anatomically at post mortem, and the prevalence of positive tuberculin tests in those clinically showing no evidence of tuberculosis, a number of practical and theoretical considerations arose whose solutions could be worked out only on children. The validity of the conclusions to be drawn from these data obtained upon children, is increased if they are compared to the experimental results upon animals.

POST MORTEM EVIDENCE OF TUBERCULOSIS IN CHILDREN has been statistically brought together by a number of investigators. Thus Müller (Munich) found that the percentage gradually rose to 53 for the ages of eleven to fourteen. This was only for cases dying from diseases other than tuberculosis; including tuberculosis, the percentage by the fourteenth year was 70. From the results of the St. Ann Hospital, Vienna, from 1903-6, the percentage of healed tuberculosis according to age period was as follows:

1. One to three years, 0 per cent.
2. Three to four years, 7 per cent.
3. Five to six years, 10 per cent.
4. Seven to ten years, 17 per cent.
5. Eleven to fourteen years, 33 per cent.

These results are considered too low in view of the higher percentages that were obtained for 1908-1909, when more careful dissection was employed. Although the number at present published is too small, verification is found in other publications. Out of these cases, each of which received a previous tuberculin test, 86 per cent. between the ages of seven and ten, and 77 per cent. between the ages of eleven and fourteen, were found with evidences of healed tuberculosis. The reports from Prag, Berlin, and other places, come into general agreement with these higher results, namely, between 50 to 70 per cent.

The results of tuberculin tests give a still higher percentage. This procedure carried out on five hundred and nine children, Hamburger and Monti, gave 53 per cent. of positive reactions, which divided itself according to age periods as follows:

1. One year, 1 per cent.
2. Two years, 9 per cent.
3. Three to four years, 27 per cent.
4. Five to six years, 51 per cent.
5. Seven to ten years, 71 per cent.
6. Eleven to fourteen years, 94 per cent.

Other reports agree in general with these figures; namely, Ganghofner (Prag) 80 per cent. by the age of fourteen, and Von Pirquet with nine hundred and eighty-eight children at his disposal obtained positive results as early as the third month, and 68 per cent. for the period from ten to fourteen years of age. Calmette and his co-workers, in a late publication, found in twelve hundred and twenty-six well individuals 50 per cent. of positive results by the age of five.

A table constructed from these tuberculin results to show the percentage of implantation which takes place during the different age periods is as follows:

1. One year, 1 per cent.
2. Two years, 8 per cent.
3. Three to four years, 18 per cent.
4. Five to six years, 24 per cent.
5. Seven to ten years, 20 per cent.
6. Eleven to fourteen years, 23 per cent.

From these tables it is clear that by the age of fourteen it is possible to have over 90 per cent. already infected, and that from the age of five about an equal per cent. become infected during each age period. From their histories it has been shown that where a child up to two years of age is tuberculous, the source of infection can be located, and that this is in nearly all instances from a case of open tuberculosis. In close connexion with these observations on early childhood, the observations of Wells and others that opsonins and precipitins are absent is confirmatory in that these bodies are probably absent before and are produced with the occurrence of a positive tuberculin test. It must be remembered that these results have been obtained in hospital cases, and have only a comparative significance with the children of the better-to-do. That these results can exist is their value. The incidence of implantation is closely bound up with the extent of contact with the public, and this determines the results which would be obtained in different classes and ages.

While these tables have been approximately substantiated, observations of an irregular or non-conforming nature have been observed whose existence cannot properly be ignored. The great majority of observers have found no instance of a negatively reacting child—tuberculin test—with anatomical lesions; that is, excluding far advanced or fatally progressing types. Isolated instances have been found, however, by Herbitz, Bartel, Weichselbaum, V. Pirquet, etc., where living, virulent bacilli were harboured without gross anatomical or clinical evidence of tuberculosis, and in some of these cases a negative tuberculin reaction was recorded.

Observations of a somewhat analogous character to these have been made in animal experimentation by Bartel, Findel, Reichenbach, and others. Thus, in the feeding of rabbits with living, virulent bacilli, it was demonstrated that the bacilli could penetrate the mucous membrane without the production of a lesion and later lodge in the glands. Bacilli were demonstrated in the mesenteric glands as late as one hundred and four days after feeding. Further, it was shown that the glands could harbour bacilli without giving evidence of gross tuberculosis, or even the typical microscopic tubercle formation. These results were obtained where actual clinical tuberculosis was not produced. When actual tuberculosis by the intestinal route was induced, it was shown that a very large dose was required in contrast to that necessary by the respiratory tract. Findel and Reichenbach state that more than a million times as great a dose is necessary by the intestinal than by the bronchial route.

It is well known that lethal tuberculosis in childhood, especially in the early years, occurs chiefly in the form of meningitis or miliary tuberculosis, but that with increasing years chronic involvement of the glands and lungs is found, so that by the fifteenth year the ratio is about that of adults. As healed tuberculosis is comparatively rare before the seventh year, about which time the chronic forms of involvement begin to appear, it would seem fair and in correlation to the above given tuberculin test results to conclude:

1. That the immunity we acquire against tuberculosis is considerably influenced by a previous implantation, which often, if not always, is accompanied by an anatomical lesion.

2. That larger doses give two possibilities according to the size of the dose, i.e., chronic tuberculosis, increasingly likely with increase of age, and the acuter forms, that is, meningitis and miliary tuberculosis.

The chronic pulmonary involvement with cavity formation is, up to the age of ten, of but infrequent occurrence. This condition is also rarely found in guinea pigs. It can, however, be produced by infection with small doses. Marked comparison can thus be drawn between the child and the guinea pig; thus, in the child we may get:

1. Implantation with or without anatomical lesions, and no clinical evidence.
2. Implantation with chronic tuberculous involvement with cavity formation.
3. Implantation with acute tuberculous involvement.

Meakins, Much, Webb, and others, have shown that treatment of healthy animals with bacilli or tuberculo-products induces results that influence a later infection. Indeed, Webb has so inoculated guinea pigs with living virulent bacilli that they will eventually withstand many times an otherwise lethal dose; Sorgo and others have produced chronic tuberculosis with cavity formation; the acute and more rapidly fatal form is the usual result of any inoculation. Thus, three similar conditions can be obtained in the human and the guinea pig. In the former it seems logical, from the data already given, to conclude that the realization of any one of these conditions depends upon the size of the dose and the biological state resulting from previous implantation; in the latter we know it depends upon the size of the dose and the previous treatment.

Other conceptions stimulated by these data might be gathered together as follows: that from infancy on, an increasing percentage of tuberculosis is found to have taken place, so that by fifteen years of age practically all children may have already received at least one implantation of tubercle bacilli; this implantation may have called forth merely a biological infection, an anatomical, or a clinical condition; that children, who up to the fifteenth year fail to give a tuberculin reaction, are, probably in the majority, those who have yet to receive their first implantation, so that it becomes a matter for serious consideration as to the advisability of making this artificially. This artificial immunization in early life is supported to a great degree by the fact that it is rare to find in adults evidence of more than one or two healed lesions. That such individuals with a healed lesion have not been re-exposed cannot be accepted, and it is probable that in these individuals a re-implantation will leave no evidence, in the same manner that it is possible to show this in infected guinea pigs. All adults must be regarded as already partially immunized. It is, I think, important to grasp this point for both experimental and clinical purposes, as all work has shown that partially immunized animals behave differently to reinfection in contrast to untreated animals. Thus, may it not be that in this light we have an explanation for the varied picture found in the clinical onset, and the varied significance in such signs as the pulse, as given in different text-books to be of great or little importance in early diagnoses? It seems logical that a circulatory system, which has lately received the effects of a spontaneous recovery, should act differently from one where the clinical onset represents the first implantation—or one far removed in time from a previous one.

One might think because of the more settled character of the post mortem findings in adults, that little of further value could be obtained from this source. This is not so; there is much that the post mortems of the next few decades must decide. We need the data that will come from the post mortems upon cases that are now making a cure because of the advantages at present available to the tuberculous in contrast to the past, where the spontaneous subsidence usually took place without recognition of the disease on the part of the patient or the physician.

POST MORTEM OR ANATOMICAL FINDINGS IN ADULTS. These are too well known to need general reference. Bartel has observed that cases of status lymphaticus and any approach to hermaphroditism show at post mortem the most complete scarification or walling off of their caseous or calcareous nodules. Such data as this must be taken into consideration in prognosis or the interpretation of the results of any particular method of treatment.

On many of the old grounds of discussion, even to-day, data of value and interest are produced from this source, as is shown by V. Hansemann, January, 1911, who pertinently remarks that, "when one speaks of pulmonary tuberculosis and thereby includes all those conditions in whose origin the bacillus tuberculosis plays an important rôle, it is impossible to understand how with one and the same appellation one can include all the many forms of tuberculosis of the lungs." "Each of these forms tends to have its own anatomical construction, its clinical course, its particular ætiological conditions; and it is impossible to expect results from but one method of specific therapy, nor is it fair to judge any therapy on all cases. Primarily one must sharply distinguish between true anatomical pulmonary tuberculosis and tuberculous phthisis." "With these conditions, a statement that the cause of pulmonary tuberculosis is the tubercle bacillus, is a logical error, for this applies to only those forms that are not tuberculous phthisis, namely, miliary tuberculosis, acute caseous bronchitis, and pure anatomical tuberculosis." "For the usual pulmonary tuberculosis, or, more correctly, tuberculous phthisis, the tubercle bacillus is only one of the ætiological factors." The tendency of typical clinical courses to have each their own anatomical structure is an inducement to make the physical examination a means of anatomical reconstruction, i.e., an anatomical diagnosis that does not begin and end with percussory and auscultatory changes indicative of the extent of the lesion, nor achieve its climax in the diagnosis of the presence or absence of a cavity. With the great variety of signs that the physical examination is capable of bringing out, one has almost a picture puzzle, whose arrangement is facilitated by continued observation of the clinical course, and more than one physical examination. Indeed, I feel it is impossible to thoroughly conceive the case without considerable opportunity for observation and certainly more than one examination.

The emphasis placed upon the varied ætiology in tuberculous phthisis places one in a better position to put a proper valuation in each case upon the variations that occur in the various signs and symptoms, such as, for example, the pulse, the amount of sputum, the presence and disappearance of the bacillus.

Both clinicallyand anatomically typical cases may be said to begin at the apices, or more exactly, as Birsch Hirschfeld has pointed out, at that point of the upper lobe where the stenosis of the upper thoracic opening may bring to bear its unfavourable respiratory and circulatory influences, as pointed out by Freund and Hart. The explanation thus offered for the selection of this part of the apex on this theory is supported by the observations of V. Hansemann, who noticed that, in cases with healed lesions and existing stenosis, there had been formed an articulation of the cartilage of the first rib.

(Personal communication.) This observation has caused some to attempt the production of an artificial joint by surgical interference. More important, however, would be systematic exercise of the muscle bundle of the first rib in childhood, as pointed out by V. Hansemann. An extraordinary statement, that involvement beyond the second or third rib excludes the possibility of recovery, was based upon the fact that no spontaneous healing was found beyond this area. This is not in accordance with clinical experience, and seems explicable on two grounds. In the first place, the observations were made upon those who had made their recovery spontaneously, and did not include the artificially induced cures that are produced at the present time; secondly, because the scarification and its contracting effects do not extend below the second or third rib, is no evidence that the involvement in its activity did not do so. Healed areas included not only scarification, with or without calcareous or caseous deposits, but also completely walled off cavities which might contain living, tubercle bacilli.

From what has been said it can readily be seen that the initial implantation or infection in the majority is never known. One may very well compare this as the first stage or primary lesion, to syphilis with its three grades: the second stage beginning with the onset of clinical manifestations. Indeed, the comparison to syphilis can be carried very far (Hamburger). The primary stage, when no second stage is produced later, is shown by a positive tuberculin test. Hamburger states that the development of tuberculo sensitiveness following implantation takes place in a gradual and irregular fashion. With a second stage, exacerbation, a healed lesion on the opposite side is a frequent clinical finding of a previous implantation. These healed or partially healed lesions exist, but are not sought for unless the lesion happens to be a fairly marked one.* Such an original lesion as a bronchial gland is often beyond our methods. Considerable light is further shed by the results of injecting infected guinea pigs with three different sized doses; thus a small dose remains without appreciable effect; an intermediate dose may give delayed manifestations at the site of the injection and the neighbouring glands; a maximum dose is appreciated by its effect on the whole organism, and causes rapid death.

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* The underlying anatomical and biological conditions which determine whether a clinical outbreak is one of auto-infection or not, seem so complicated that it is usually impossible to determine this clinically. There seem to be at least three possibilities: 1. True auto-infection. 2. Auto-infection stimulated by a new implantation. 3. True reinfection from without, with or without participation on the part of the old infection.

If there were no second stage it would not be so necessary to study the conditions of the first. But there are a great number of second stages, that is, cases of clinical tuberculosis; and for its diagnosis, that is at the onset of the second stage which is often one of degree only, one must admit that the ordinary methods generally produce sad results, and even in the hand of the so-called specialist can frequently give but probable diagnoses. The border line of where the lesion subsides, and where it produces symptoms and increases its involvement, is a very indefinite one—and 'one over which the enemy can very easily steal an undetected and successful march. These conditions are almost certainly not confined to the lungs. I have been given to understand that the clinical variations possible in tuberculous joint disease were greater than, for instance, when the disease was due to the pyogenic organisms. Watson Cheyne, 1911, says that our knowledge of the conditions under which the tubercle bacillus acts is by no means so full as that concerning the pyogenic organisms. Although my observations upon tuberculous joint disease are very limited, they do not support the idea that it is the lack of knowledge of the conditions under which the bacillus acts, but the lack of knowledge of the degree of immunization that the host has acquired from former exposures. As a matter of fact our knowledge of the conditions under which the bacillus acts experimentally is fairly wide and decisive. Even clinically I understand there is a good deal of definite data—such as the fact that a sprain is more likely to be followed by tuberculosis than an open fracture. Once more may I emphasize the cause of the varied onset and course—it is our lack of knowledge of the degree of immunization which the host has had from previous implantations and, of course, the size of dose of the infection causing the present clinical condition. This conception harmonizes with the lessened influence that heredity is considered to bear on the incidence of tuberculosis to-day. The danger for a child living with tuberculous parents is not so much its possible predisposition but the continual exposure to doses which may at any time go beyond its powers of resistance.

As we have seen, the result of an initial tuberculous implantation is the appearance of tuberculin sensitiveness, that is, a positive tuberculin test. To a greater or less degree, others of the so-called antibodies spring into existence, such as agglutinins, precipitins, opsonins, and complement fixation bodies. Sufficient satisfactory work has not been done as yet to warrant definite statements. That activities of the infection must bring about various changes in these antibodies is almost certain, and what is of greater importance, these biological signs precede the local and clinical response of the patient. Thus it is that the logical sharpening of our diagnostic and prognostic methods lies in the investigation of these biological or biochemical conditions or reactions. At present, almost without exception, they are of extremely lessened value—if not even misleading—when stripped each of its clinical anamnesis. It can be said that even the presence or absence of the bacillus in the sputum loses much of its value when considered apart from the case. The references I have already made to V. Hansemann's work indicate this clearly; this I should like to emphasize by saying that frequently the fact whether the bacillus is present or not may be a very minor consideration, and that the non-recognition of this fact is often a false basis for a criticism of tuberculin therapy or any other therapy.

I believe the man working with tuberculosis is credited with being able to see nothing but tuberculosis, and probably even worse things are said if one would investigate the condition further. I am sure this is often wrong, and that we who are credited with this bias tend to minimize rather than exaggerate the power of the bacillus, and, further, do not often feel that disinclination to have anything to do with the tuberculous that one sees with the man who does not believe in the enormous extent of the infection.

To continue our comparison with syphilis and to emphasize the need of correlation with laboratory and clinical work, I will refer to the value of the Wassermann reaction. In syphilis the absence of the reaction during the period of a suspicious primary lesion is of much greater value than, for instance, during a possible tertiary manifestation. Although there is, thus, in the study of the antibodies a means of logical progress, it is beset with difficulties. Apart from the detection of the bacillus there is no one diagnostic test. If the fact that adults are already partially immunized is capable of upsetting the clinician's considerations, this is nothing in comparison to the state in which this fact places the immunologist.

The tuberculin test, as already emphasized, becomes positive after the first implantation; it may be kept up by sufficiently closely spaced implantations or it may subside owing to lack of stimulation from implantation; and all this in a "normal" subject. In definitely tuberculous patients. who are not in immediate danger, it may be present to a marked degree, or it may have subsided to a questionable condition. Usually this questionable reaction is found in cases of long standing, where the anatomical condition is to a great extent fibrosis, but this is not necessarily so. I have found it in cases where the clinical history was of short duration, the anatomical involvement small, and where recovery took place. This state, however, is probably rare. As the most comparable phenomena, namely, anaphylaxis,* has a similar condition, which is called refractory, I have found it convenient to use this term for certain favourable cases of tuberculosis which fail to give the tuberculin reaction in other than a doubtful form.

Two other immunological reactions which I wish to take up are complement fixation and the inhibitive reaction. I will deal with the former first. It is in principle best known as the Wassermann reaction, although in this it cannot be regarded as specific. Specifically it is the Bordet-Gengon phenomenon. There is probably no other reaction which has received as much attention, and certainly none which has been as much ill-used. There are a number of factors involved in its technique, and besides it has had at times a great monetary value. The general trend of publications has been to regard a positive test as indicative of clinical tuberculosis and of a favourable aspect, some claiming a greater percentage of results in tuberculin treated cases. It is illogical to compare the different results, both because of the technique, and the antigens used—that is, the extracts of the bacillus. I will not detail the theory underlying these test-tube reactions. For our purposes to-night I wish to refer only to the value of the results got by these tests, in consideration with the clinical case. It may, however, be clearer to state that the tuberculin test, as you know, is performed on the patient, while the other two tests are test-tube experiments with the serum of the patient, and can demonstrate quantitatively substances in the serum. Formerly the proteins were considered to be the important substances in complement fixation. Lately it has been shown that other groups play an important rôle, notably the lipoids and the fats; knowledge of the extent to which these participate in the whole subject of immunity will be aided by this test. Much has claimed to have obtained from the bacillus three important chemical groups, that is, tuberculo protein, a tuberculo acid fats and lipoid mixture, and tuberculo neutral fats. Using these three as antigens, he has obtained varying results with patients. His work has not yet been developed sufficiently to be of use clinically, although many interesting questions have been opened. From the standpoint of the immunologist he has made three important statements: (1) By the injection of an extract of the bacillus he has produced a relative immunity. (2) By the injection of an extract, a tuberculin sensitiveness; and, (3) Complement fixation antibodies. Until Much's work appeared, my own results were the first to demonstrate this third point, and this was at the time of publication opposed by Laut working with Krause of Vienna, Friedberger of Berlin, and others.

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* The analogy between tuberculin sensitiveness and anaphylaxis has long been noted, but the work of Baldwin, Krause, Moss, Caulfeild, Austrian, and others, has shown very definite points of comparison.

About a year ago I had the honour to report at this academy upon a test-tube reaction which I called inhibitive. This in principle is exactly the opposite to complement fixation; that is, it does not attract complement. Its value is to a large extent prognostic in that if a suitable case gives an inhibitive reaction and if, later, this disappears, there occurs in the course of the case a retrogression. In contrast to the favourable significance of the inhibitive reaction, complement fixation in my hands frequently is associated with unfavourable clinical manifestations. It is impossible to state that these values can be given to all cases where the tubercle bacillus is present, but I can state that if the results of the tuberculin test are marked and if the case is one in which the bacillus can be regarded as the chief factor, a fully positive inhibitive reaction is associated with favourable progress and its disappearance with unfavourable clinical features. This necessity of considering the clinical aspect of each case has its logical basis in the great variety of clinical conditions which can be drawn together and labelled "pulmonary tuberculosis." The value of the forewarning given by the results of repeated tests can effectively be utilized in the regulation of rest, exercise, and tuberculin therapy, three of our chief therapeutic agents.

In two instances, in clinical normals, the disappearance of a partial inhibitive reaction* at the same time that the type of the tuberculin reaction changed, allowed a diagnosis of a fresh implantation. In one of the cases the presence of the bacillus in the sputum was demonstrated after many examinations. In this case the implantation was probably an auto-infection. In the second case, symptoms of a slightly suspicious nature arose. Both cases are again apparently normal. In both of these I would bring to your attention that it was through these biological tests that attention was drawn to the clinical condition.

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* In all the work on the inhibitive reaction which has now been in use for nearly two years, an alcohol ether extract of the bacillus has been used.

CHART I

CASE 1372—ILLUSTRATING THE PROGNOSTIC VALUE OF A CHANGE OF BIOLOGICAL SIGNS

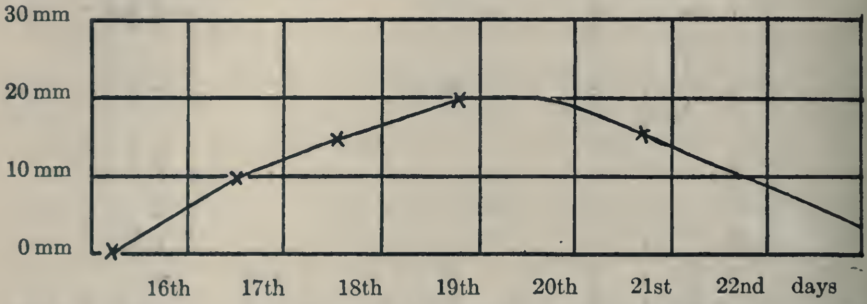
Physical Findings	General Condition	Biological Data
Nov. 5, 1910—Left apical involvement to third rib anteriorly and behind to post-apex evidently an old lesion without much evidence of activity.	Excellent: good prognosis given.	Nov. 16, 1910—Inhibitive reaction.
Dec. 9, 1910—Possibly less marked.	Better if anything.	Jan. 14, 1911—Loss of inhibitive reaction.
Jan. 17, 1911—Bilateral involvement, without much change in signs.	As yet no evident change.	Feb. 3, 1912—Loss of inhibitive reaction.
Towards February began to develop fever, had small but frequent hæmorrhages, and became acutely ill with rapid change in appearance.		
March 13, 1911—Died. Post mortem showed marked fibrosis in left apex, with acute tuberculous broncho-pneumonia in upper and middle lobes. Right lung, small cavity in apex; surrounding infiltration is opened into by bronchus and contains hæmorrhagic areas. Lower lobe, almost complete tuberculous solidification.		

N.B.—This case was referred to the sanatorum with a most favourable prognosis, which was agreed to by all. As a result of the biological findings on January 14th, an examination was made by a physician who had hitherto not examined the case, so that the bilateral condition need not be regarded as an extension, but a detection. Two examinations made by me in November and January (1910) showed only slight variations. Until after January 17th no definite symptoms became evident.

CHART II

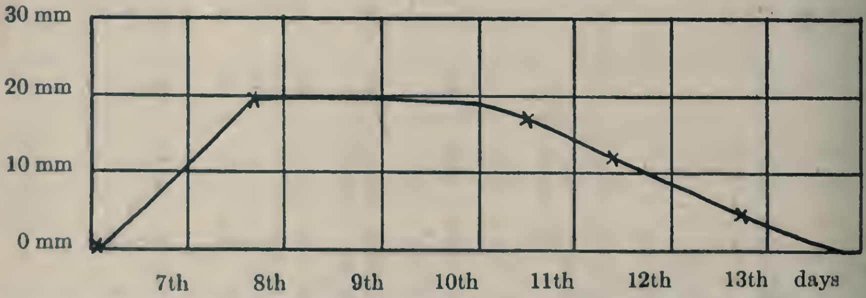
CASE 302—ILLUSTRATING CHANGES IN BIOLOGICAL SIGNS IN A CLINICAL NORMAL WHERE, AFTERWARDS, THERE DEVELOPED SUSPICIOUS SIGNS OF A POSSIBLE TUBERCULOUS INVOLVEMENT.

Cutaneous Tuberculin Test, April 16th, 1910.



Which corresponds in type of curve with regard to time, with three previous tests made at about 6 month period intervals. The second test reached the 30 mm. line but presented the same type with regard to time.

Cutaneous Tucerculin Test, October 7th, 1910.



In this test there was no apparent infiltration, the colour being easily compressable. Formerly the infiltration had been marked.

Results of Test Tube Experiments:

November 3rd, 1910—Loss of Inhibitive Reaction.
November 16th, 1910—Slight " "
January 3rd, 1911—Full " "
February 3rd, " — " " "
March 13th, " —Partial " "

Previously at least a partial inhibitive reaction had been obtained, which is the rule with normals giving a tuberculin reaction.

Diagnoses—Fresh implantation about September—October, which would fit in with the very indefinite signs and symptoms.

Calmette independently noted a phenomenon with the serum of an immunized calf which he designated as "inhibiteur." This is apparently the same as that which I have called inhibitive. Lately he has made a further publication in which many of his conclusions have been also reached by my results, although the work was done with different objects in view. Calmette divides all tuberculous sera into two classes:

1. Those containing antibodies only, i.e., complement fixation bodies.
2. Those containing both bodies, i.e., complement fixation bodies, and "inhibiteur."

From my own results I have divided sera into three classes:

1. Those containing complement fixation bodies.
2. Those containing inhibitin.
3. Those giving neither reaction definitely, but various results probably dependent upon several conditions and classified tentatively as indifferent reactions.

Calmette concludes in the last publication which I have, that "it may be possible from these researches to establish a relationship between this classification and the evolution of tuberculosis." Calmette has worked almost entirely with sera of immunized animals, while I have worked almost exclusively with the sera of patients, and have found in patients chiefly a prognostic value.

On such a subject as this I have felt it is perhaps impossible to make an interesting paper: it certainly has not the dramatic possibilities that other fields of internal medicine have—it has no "areas of vast silence," as have certain of its sister branches of medicine. In fact it has usually an undramatic but pathetic aspect, whose routine care can become very monotonous. Unfortunately, in this routine care the physician rarely has the stimulus of seeing his physical diagnoses proved or disproved, and the enthusiasm for his prognosis has many months to wait for its valuation. A knowledge is gained in this manner, by the observation of many patients, that can be acquired in no other way. It is, however, I think, a judgement based more upon intuition than on reasoned deduction. Could the so-called pure clinician have added to the data which he derives from the history, the physical examinations and his routine observations, these biological data when and as frequently as needed, he would, I feel sure, be in a quandary as to which he could best dispense with. I state this after having taken considerable pains to acquire training and experience with the clinical factors both here and abroad. There is, of course, but one way in which these facilities may be available to the profession, and that is through the medical organization of our institutions and hospitals. I will not use the word ideal because the practical need of such organization makes it necessary rather than ideal.

My purpose to-night has been to present data obtained at the post mortem table, in the laboratory of the bacteriologist and the biochemist, which may amplify the conception of a case which we get by the history, the examination, and the clinical observation. In so short a treatise there is great danger that each field is sacrificed at the expense of the other. If, however, the adherents of either side find any correlation to their ideas, the object of these remarks has been attained.

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OUR PRESENT ATTITUDE TOWARDS TUBERCULOSIS

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THE intent of this paper is to point out certain conditions as they exist in Ontario—and Ontario is certainly no exception to the country at large—with reference to the physician's relation to them as it is, and as it might be. It will be necessary first to consider some sociological data, and to review briefly certain accepted theories and scientifically demonstrated facts regarding the prevalence of tuberculosis.

In Canada the death rate from all forms of tuberculosis is one hundred and eighty per hundred thousand of population, according to the census of 1901. This death rate is almost identical with that of England and Wales, and is somewhat lower than that of the United States for the same period, but its percentage, 11·96, of the general mortality is rather higher than in either of these countries.

In Ontario the report for 1908 shows a death rate from tuberculosis of one hundred and twelve, a pleasing contrast with that of one hundred and fifty in 1901, while the deaths from tuberculosis were 7·7 per cent. of the general death rate, as compared with 11 per cent. seven years previously. From 1881 to 1901 the deaths from tuberculosis were from 10 to 11 per cent. of the general mortality. Therefore in Ontario, in so far as figures are available, it seems we have more than confirmed Professor Osler's graphic statement that we to-day run rather less than half the risk of dying of consumption that out grandfathers did, and only about three-fourths the risk our parents did, a statement based upon the fact that eighty years ago consumption caused one-fifth of all deaths, while to-day it causes but one-tenth. We have, however, still to reckon with two thousand five hundred deaths yearly from tuberculosis, a number probably a good deal below the actual mark because of faulty diagnosis and improperly reported death certificates. This discrepancy may be so great that the medical health officer of our largest city is inclined to raise the three hundred and thirty-three reported deaths to five hundred and seventy-six

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An address read at the annual dinner of the Toronto General Hospital Ex-House Officers' Association, April 13th, 1911.

estimated deaths, or 72 per cent. increase, as a fair actual estimate. Mortality figures, however, estimate the dead only, and not the wounded. Some idea of the numbers of these can be obtained from recent autopsy records. We have to rely mainly upon European statistics, and it must be remembered that only the sick enter hospitals, that the dead only form a basis of investigation, that a considerable number of tuberculous patients are admitted to some hospitals, and that a hospital population is not typical of the whole population, especially as regards age and social condition. But, since the working classes produce the great majority of patients, and tuberculosis is especially the problem of this class, such researches must give much information of value. According to the criteria taken as to what is evidence of tuberculosis, it has been shown that it exists in from 50 per cent. to 96 per cent. of all bodies, where the material has consisted mainly of adults, in 48 per cent. of children under fifteen years, and in 16 per cent. of children under three years.

The study of the modes of invasion as shown at autopsy gives also valuable suggestion as to the possible frequency of infection. The tonsils are often the site of a primary tuberculosis, and have been found with this disease in 15 per cent. of the cases investigated, one series consisting of children under thirteen years of age who came consecutively to autopsy. The reports are contradictory as regards the frequency of primary intestinal tuberculosis, but English pathologists pretty well agree to the presence of a primary intestinal lesion in 18 per cent. of all cases. Especially instructive are the series of cases from American and German sources in children who died of diphtheria, which give results very similar to one another. In the nine hundred and thirty-four cases from the two series, one hundred and seventy-five, or 18 per cent., showed tuberculosis, and the origin was primary in the intestine in 37 per cent.

The primary tuberculosis of the lymph nodes connected with the digestive tract does not at all necessarily mean infection with bovine bacilli, as there is often abundant opportunity, especially in children, for the swallowing of tuberculous material of human source. In New York City, where about 10 per cent. of average milk specimens yield tubercle bacilli, it is estimated that but 2½ per cent. of all tuberculosis is caused by bovine infection, and 20 per cent. of that of infants, but 45 per cent. of cases of tuberculous cervical adenitis alone in children under sixteen is due to this cause.

There is a tendency to assign far greater weight than formerly to primary infections by way of the digestive tract, more especially in children, but pediatricians are inclined to ascribe the great majority of infections to the pulmonary route, and consider that the intestinal route plays a relatively unimportant rôle. In one hundred and twenty-five consecutive autopsies at the New York Foundling Hospital, bronchial glands were found tuberculous in all.

The relative frequency at all ages of the sites of the primary lesion is found to be one-fifth in the digestive tract, two-fifths in the respiratory tract, one-fifth in either of these tracts, and one-fifth of uncertain site.

It is natural to assume a seemingly obvious air infection for the respiratory group, but descending infection from the cervical and ascending infection from abdominal nodes frequently cannot be excluded. The present general opinion is, however, that pulmonary tuberculosis, in a large majority of cases, originates from a primary air-borne infection of the lungs.

Additional evidence as to the prevalence of tuberculosis has been recently given by tuberculin, and the findings obtained by it corroborate in general those of autopsy. Relatively small doses given subcutaneously gave 68 per cent. of reactions in soldiers in the Austrian army, men who are of better average physical condition than the general population, and who have an incidence of pulmonary tuberculosis of only one per thousand as compared with 2·4 per thousand in British and colonial troops. The cutaneous test gives a positive reaction in the great majority of adults, while in children the percentage of reacting cases rises rapidly from 5 per cent. in the first year to 70 per cent. in the tenth year, and to above 90 per cent. in the fourteenth year.

In childhood, the earlier the age the more patients reacting show a manifest tuberculosis, and all patients under two years who react are clinically tuberculous. There is good reason for the speculative point of view that tuberculosis is eminently a children's disease, producing fatal results at once in early childhood, or an increased resistance to subsequent infections as the result of the successful reaction of the organism against the infection; and that the whole pathology of adults demonstrates only chronic processes, re-infections, or terminal stages. It has been estimated that only about one-fourth of fatal cases can be ascribed to infections of short duration, the balance having been acquired primarily in childhood. The fact of infection itself probably plays a less important rôle in the varying production of tuberculosis than the individual resistance to the more or less inevitable infection. A point also to be considered here is the recent conclusion of a distinguished biometrician, "that the diathesis of pulmonary tuberculosis is certainly inherited, and the intensity of inheritance is sensibly the same as that of any normal physical character yet investigated by man." Statistical inquirers, however, do not satisfactorily allow for the greater opportunity of infection for the descendants, nor, in upholding the influence of the inherited diathesis, is the mortality in direct proportion to the density of population explained.

Some idea of the magnitude of the tuberculosis problem may be deduced from such observations as those already discussed, but it is hardly possible to estimate even roughly the actual amount of sickness caused by tuberculosis in any population. Because of certain features of civilized life there is a fairly even distribution of the disease in civilized lands, very little influenced by climatic differences, but with local variations proportionate in the main to the relative density of population. It is evident that the disease is enormously frequent in any civilized community, affecting at some time almost everybody, but it by no means follows that what may be regarded as a biological implantation will in all instances give recognizable clinical manifestations. Considering the foregoing statistics, Prof. Osler's estimate seems fully conservative when he says that comparatively few people reach fifty years of age without a focus somewhere of tuberculosis, and that if even only 50 per cent. develop this focus, the number who may become seriously diseased is enormous.

Man is everywhere the great infective agent for man, but this must not let us lose sight of the fact that notwithstanding the small percentage of all cases that are actually due to the bovine form of tuberculosis, one-fifth of the tuberculosis in small children is due to this cause. From the statistics of tuberculin reactions obtained from the Veterinary Director General, tuberculosis may not seem to be highly prevalent in Canadian cattle, as only 10 per cent. react, but a high authority on veterinary matters in Ontario considers that 25 per cent. is a very conservative estimate of the incidence of tuberculosis in Ontario dairy herds. This estimate, as one might reasonably expect, is not very far from that of the incidence in cattle in the Eastern States.

It is a familiar matter that the greatest loss of life due to tuberculosis occurs in the working age period, and the actual number of deaths, and the proportional mortality, are highest in young adult life. In Canada 40 per cent. of all deaths occurring between fifteen and thirty-four years of age are due to tuberculosis. If, however, one compares the figures of deaths from tuberculosis with the total population at different ages, because of the lesser number of people living at the later age periods, late middle life actually shows a higher death rate from tuberculosis than early adult life (English statistics, 1904). We have, therefore, much reason to suspect tuberculosis, clinically, in patients of later adult life, though, because of the greater amount of illness at this period, tuberculosis, amongst the varied causes, plays apparently a less important rôle than in earlier life.

With two thousand five hundred deaths in Ontario from all forms of tuberculosis for each of the years 1907 and 1908, two thousand one hundred (84 per cent.) are recorded as tuberculosis of the lungs. We may, then, conservatively estimate the actual amount of active pulmonary tuberculosis in Ontario as at least ten thousand cases. Any figures suggesting the incidence of disease from the death rate are open to criticism, but this number is reached by two methods which seem reasonable. There are five hundred and forty-seven beds in the nine sanatoria and special hospitals, which have in the past year treated fourteen hundred and twenty-one cases. A fair classification of these cases from a sanatorium standpoint would be 15 per cent. incipient, 45 per cent. moderately advanced, and 40 per cent. far advanced. Assuming that the mortality figures represent the death of the far advanced cases, who all die within the year, and that the proportion of other cases to these is the same in the province as in the sanatoria, then the total number of recognized cases in the province, including those treated in sanatoria, is fifty-two hundred and fifty of the same average type. As definite symptoms of tuberculosis have been found to average more than a year's duration in the sanatorium group—it is naturally often impossible to fix the time of actual implantation—we may assume that there are at least an equal number with active pulmonary tuberculosis, besides those estimated from the death rate, giving ten thousand five hundred in all. In pre-sanatorium times the average duration of life of tuberculous out-patients, with active disease, at a metropolitan hospital, was placed by Pollock at more than four years, so that at the present day under improved conditions five years would be a very reasonable estimate of the duration of the disease. From the actual number of deaths we must, then, estimate approximately ten thousand five hundred, a number identical with that obtained by the other method. R. W. Phillips, of Edinburgh, considers that a conservative estimate of the cases of pulmonary tuberculosis worthy of medical supervision in any locality may be made by multiplying the mortality by ten. Estimated in this way the incidence of tuberculosis would be twenty-one thousand, just twice that already given. The proportion of these will vary according to the density of population, as does the death rate, which is the ratio of one hundred for country and small town, one hundred and seventeen for the group of fifteen towns over five thousand, and one hundred and forty-three for the group of nineteen cities. Even under the present improved percentage mortality, one hundred and seventy-one thousand of those now living in Ontario may expect to die of tuberculosis. If the correction of 72 per cent. increase over the reported mortality mentioned above, is applied to the province, this number should be increased to two hundred and ninety thousand. According to the smaller estimate of present cases, each of the three thousand physicians in Ontario, if cases were fairly divided, should now have four under treatment, and he should acquire a new active case every eighteen months, which will die, besides others which should recover. Phillips' estimate would give eight to each man to start with.

There is cause for satisfaction that there has been an actual reduction of seven hundred fatal cases (23 per cent.) in 1908 compared with ten years earlier, at which time the institutional segregation and education of cases of pulmonary tuberculosis in Ontario was inaugurated.

Contrasting the death rates of various countries and communities, with phthisis excluded, for the early eighties—the time of the discovery of the tubercle bacillus—with the earlier years of the present decade the annual death rate has in all been reduced in varying degrees from 3 to 33 per cent., while the diminution in the death rate of phthisis, except in two countries, has been from 7 to 52 per cent. In general, the reduction in death rate from phthisis is enormously greater than that of the general death rate from all other causes, and the experience of a number of countries is that the conditions improving general health have not had any constant effect on the prevalence of tuberculosis, as these are frequently offset by fresh handicaps developing in modern industrial life. Improvement in general sanitary and social conditions, though exerting a certain influence, has not been the principal cause in diminishing tuberculosis, and influences more powerful and more rapid in operation must have been at work. Newsholme epitomizes an elaborate analysis of the causes which have decreased the death rate of tuberculosis by saying that "no influence except that of institutional segregation has appeared in actual experience in a constant relation to the amount of tuberculosis, and it must therefore be accepted as having been the predominant influence." Until quite recently only a relatively small amount of this segregation has been accomplished in institutions especially intended for this purpose, and thus far hospitals, homes, refuges, and alms houses have played the more important part.

In Ontario, these latter institutions have no doubt played some part. Fifty-four only died of tuberculosis in the year 1909 in provincial asylums, 17 per cent. of the total number of deaths. When, however, only one-seventh of the total number treated in the special institutions for tuberculosis die in them, and the fourteen hundred patients therein treated (1910) remain for an average period of three months, it is reasonable to assume that their main influence is in education, both directly for the patient and indirectly for the public, rather than in segregation. This influence, small in the earlier years of the decade 1897 to 1907, has been increasing as their number and the number of patients treated have increased, and to this educational influence must be added that of the recent auxiliary influences in individual treatment and education, the dispensaries and visiting nurses, besides the general educational propaganda against tuberculosis. In Ontario education and segregation probably divide honours in the 25 per cent. reduced death rate.

Our provincial government expects to solve the problem by advocating the establishment of local sanatoria through local organizations—which it aids generously by contributing both towards capital and maintenance costs—and by the education of school children. Both of these measures are admirable in themselves, but, without wishing to depreciate the value of local sanatoria, I do wish to emphasize the fact that the easy care of advanced cases within the limits of the municipality is the more pressing need in all communities, and that this need in the small communities at least, where general hospitals already exist, could probably be most cheaply met, both in capital and maintenance expense, by erecting a wing or building on the grounds of the hospital for irrecoverable cases, and utilizing the administrative organization of these hospitals. The recently published opinion of the State of Rhode Island commission on hospitals to consider the care of advanced cases is, that, since the chief object in sending an advanced case to a hospital is not the good of the individual, but the good of the community, unless the patient or his relatives wish to pay towards the cost of his maintenance, there should be no charge, but that since a sanatorium affords a patient the opportunity to save or prolong his life, he can, if he is able, with reason be expected to pay part of the cost. The establishment of small sanatoria must be of benefit, both to the general public welfare and in great part to the individuals therein treated. I have the conviction, however, that the patient who has a fair fighting chance has the best opportunity for recovery in larger institutions, or centres where an accumulated experience in tuberculosis has been obtained, since the smaller institutions can rarely hope to retain men of either breadth of training or specialized experience, and in the efficient management of tuberculosis both of these requisites are essential. But such larger institutions must surely be placed in adequate hands.

That the onus of responsibility in combating this preventable disease should rest upon voluntary organizations, such as anti-tuberculosis associations, is scarcely more defensible, logically, than that there should be anti-scarlet fever or anti-small-pox associations. The results of the latter diseases are certainly more dramatic, but so far as actual mortality goes, that of small-pox in the eighteenth century, when it was at its worst, showed just the same percentage of deaths that tuberculosis does to-day. As an offset to the disfigurement and deformity resulting from small-pox, we have the misery, poverty, and economic loss of tuberculosis. With our present knowledge of the effect of segregation in limiting the spread of acute infections, we would not suffer this more dramatic, acute infection of small-pox at any cost, in the present day, to inflict any community, even though we had not the simple means of protection that vaccination affords. Why, then, should we permit this incomparably less infective and less dramatic tuberculosis to have sway with so little opposition when it is so readily controlled by limited segregation, disinfection, and widespread education?

Voluntary organizations are highly desirable for maintaining public interest and furthering education on the subject, but in those communities where most enthusiasm has already been shown in the fight, it is recognized that the control of tuberculosis is a task far beyond the resources of private philanthropy. It is unusual for any government to inaugurate remedial measures unless it is shown to be the evident wish of the people. The fact that two years ago a bill providing for the registration of tuberculosis in Ontario was given its quietus in a speech—made with the good intention, no doubt, of lessening the existing phthisiophobia—which belonged to the days before Villemin, to say nothing of those before Koch, is fair evidence that this province is either unduly conservative or indifferent in some matters of public health. As a question of business method in meeting our problem, it is surely necessary to know where we stand in this matter regarding prevalence and social conditions, and this can only be accomplished by a stock-taking, made possible by notification and registration being enforced as a provincial measure, or at least encouraged as a municipal measure by government. Sociologists, both lay and medical, who have deeply considered the desirability of, and the effects produced by, notification and registration, and who have been instrumental in effecting it in their communities, where it has worked well, find the evidence so overwhelmingly in favour of it, and so little to be said in opposition, that to them serious discussion of the subject seems almost futile. To control the situation this measure is the logical first step, but it must be remembered that it is the initial measure towards the attainment of a desired end, and not an end in itself. Along with notification and registration must go the power to follow up and supervise cases, as otherwise the law will have but little practical bearing, and it will also be of extremely limited value if facilities are not provided and used to make registration effective in prevention. The success of notification has been found to be directly proportionate to the amount of help forthcoming for the notified patients. Bulstrode in his report to the Local Government Board, England, emphasizes the view that notification should not be made compulsory except under special enactment, such as expressly dissociates, administratively, phthisis and everyday infectious diseases.

While there are a number of moot points, every argument brought against notification can be reasonably met either by theory or by the result of experience, and it has been shown that a practical law can be framed and administered without causing hardship to the individual. In other communities opposition may be said to have arisen hitherto from practically only one source, namely, the medical profession, and where lay opposition arises it has been found that it can be traced to this source. It is quite possible that the opposition on the part of our profession, which has been so insistent in some communities, would be materially less were the procedure of the State of Maryland adopted. There, a fee of $1.50 is allowed for each case reported, in order to compensate for the time consumed through filling out the necessary forms for notification and explaining to the patient and his family the principles of prevention, a time-absorbing procedure for which the patient cannot and will not pay.

There is much cause for congratulation upon the improved situation found in Ontario, to which, as a body and as individuals, physicians have contributed much, not only towards the broad sociological movement itself, but in making that movement effective by transmitting its intent to the individual. Nevertheless, there exists reason for inquiry concerning our present point of view upon pulmonary tuberculosis and the possibility of its early recognition, and also concerning the adequacy of the methods which now obtain in our daily work and which are of such moment to the future of the individual afflicted. The public welfare will depend upon organized social effort; the welfare of the individual will mainly depend upon the wisdom and training of his physician.

THE question of public health is one that has long needed more active consideration. This important subject at present constitutes a branch of the department of agriculture and is under the supervision of a director general of public health. But the government is now considering the establishment of a department of public health, which will be conducted along the same lines as are similar departments in other countries, for instance Germany. A similar department is being organised by the United States.

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HOUSING CONDITIONS IN CANADA

By Mrs. W. R. Lang, Toronto

TWO years ago, owing largely to the interest which His Excellency Earl Grey took in the social and national welfare of Canada, a prominent English housing reformer, Mr. Henry Vivian, M.P., visited Canada, and, after careful investigations, gave a series of lectures on the housing conditions here, which did much to dispel our not unnatural belief that it was impossible for the slums of the Old World to have been already reproduced in this land of promise. That the evils of improper housing, so far-reaching in their effects on the individual and the nation, physically, morally, and economically, have got a start, not only in the larger cities but in the rural districts as well, is due partly to the rapid growth of the country, partly also to the apathy and indifference of the many who are making such haste to get rich that they have no time to pause and consider how and where their poorer neighbours are living. Ignorance that is due to indifference or selfishness can never justify wrong conduct, but now we have not even that excuse, for the startling statements made by Mr. Vivian have been followed up and investigated by various charitable organizations, by public-spirited citizens, and finally by the provincial and municipal authorities, who one and all tell us that conditions have been revealed in Canada quite as bad in *character* as any in either European or American cities, though, fortunately, they are thus far limited in *extent*.

But what, it may be asked, is meant exactly when one talks of bad housing conditions? Unfortunately, they are known only too well to the health inspector and the individual investigator; the typical attributes of slum life repeat themselves with wonderful regularity wherever ignorance or indifference has allowed the growth of insanitary districts. Thus we find houses that are almost inaccessible from the public street, devoid of light and air, generally surrounding a back-yard or lane of indescribable filth, which is at once the store place of junk and the receptacle of all the refuse of the houses; these back-yards become actual swamps in the spring and autumn, and are inches deep in germ-laden dust in summer, which only awaits a favourable wind to be blown broadcast over the city. No amount of sanitary by-laws could make these places habitable without radical structural alterations. There are also numbers of houses in the small cities, and even more in the bigger ones, which, although situated on or near streets possessing full sewerage and water connexion and up-to-date plumbing, have, nevertheless, no sink, drain of any sort, or water installed. A very common way of building small property has been to build as many houses as possible round a common yard or along a narrow lane, to put in one outside tap, nearly always frozen up in winter, for the common use of all the tenants, while the ordinary toilet arrangements are of the most primitive kind. In all the reports mention is made of the absolute inadequacy and filth of the outside closets, ranging from more or less "possible" privy-pits to those consisting merely of boxes with no seats, all of which are in an overflowing condition; one was reported as not having been cleaned out for eleven years, a serious menace to health and decency.

Others of the houses investigated are structurally unequal to the duties of a house, because they fail to shelter the inhabitants from the cold and wet, a most necessary attribute of any dwelling in the rigorous climate of Canada. Others, too, are damp because they are built flat upon the ground or a little below it, without cellars or foundations. Yet these places are filled to overcrowding, as all reports seem to show. One of these, from the medical officer of health for Hamilton, may be quoted: "Within the last few weeks we have had occasion to take summary proceedings against several nests of most objectionable rookeries. In one of these clusters, abutting on an unpaved and unsewered alley, a house of about 18 x 20 contained four families, two upstairs and two below. All the rooms were ill-lighted, unclean, and impregnated with the pungency of ammoniacal odours. A small bedroom in one of the downstairs apartments was the sleeping allotment for four persons. The kitchen contained a sofa where one man slept; what small space remained was utilized for cooking and eating purposes. There was no lathing or plaster, the shabby paper, faded and torn, being pasted on the rough boards; the sills of the doors, both front and back, were several inches below the level of the alley, so that in times of storm the water poured in like a miniature river and flooded the whole place. The roof furnished ample evidence without minute inspection of being in disgraceful repair. The revenue from the unfortunates who occupied these premises was about twenty-five dollars per month."

On the other hand, where there are cellars and basements in these houses, they are only too often sub-let for a variety of purposes, though generally damp and unfit for use. The medical health officer of Toronto says: "Damp basements are found in all the districts investigated. One dwelling had four inches of water in the cellar; another, which rented for twenty dollars a month, had four feet of water in the cellar. In the cellars and back-kitchens, hens, ducks, and dogs are sometimes kept. Another basement is the sleeping-place of two boys, twelve and fourteen years of age respectively. It has not air or light enough for the purpose. There is at the door of this sleeping-place a dirty water-closet, and a sink which is out of order; the whole basement is damp. In another basement in this district twelve people live."

Cellars are never a suitable dwelling, nor are "dark" rooms, i.e., rooms which have no direct access to the outside air. These rooms are practically always used as sleeping apartments, a dangerous practice and one of the leading causes of tuberculosis, which continues and will continue to baffle the efforts to exterminate it so long as housing conditions remain as they are. The International Congress of Tuberculosis held in Paris in 1905 declared that "the problem of healthy dwellings will always rank first in the prophylaxis of tuberculosis." This aspect of the housing problem is important, particularly in view of the fact that the tendency is for the number of these rooms to increase, not only in so-called slum property, but actually in the modern and otherwise luxurious apartment buildings which are springing up on every side in the better class of residential districts. Dark rooms in *all* houses should be strictly forbidden, not only for the benefit of the present inhabitants, and the effect which their health has on the health of the community, but also because "history repeats itself," and on every side, as cities grow older, we see the well-to-do citizens moving to the outskirts, and houses, once inhabited by them, being converted into tenement buildings and common lodging houses, forming the slum homes of the less fortunate. This tendency to sub-divide houses, built for single families, is one full of dangers. The health authorities of London (England) recognize its evils, as is shown from the following interesting quotation: "There has been proceeding for a number of years a change of usage more than a change of actual property. Whole streets and squares of houses formerly occupied by single and often good-class families, are now occupied as separate dwellings on separate floors. The private house has become a tenement house. There is a common passage and a common staircase, both of which are open to the public. The history of such a house is a dismal record of degeneration. Year by year its state slowly but surely becomes worse. The sanitary conveniences were designed for one family and now provide for four families; the same must be said of the water-supply and wash-house accommodation. There can be no doubt that the ill ventilation and the difficulty of access to the sanitary conveniences, scullery, wash-house, or dust-bin, may indirectly act as causes of ill-health and undesirable habits. Hence it comes about that both house and tenants degenerate." The same process is going on in all the Canadian towns and cities, and the remodelling and subdivision of existing houses must be watched with the greatest care, as it offers a tempting way of growing rich quickly to the unscrupulous landlord. Sometimes it is cottages which are subdivided: "In district No. 4 there were last year two little five-roomed cottages. They are now four cottages, in each of the four dwellings there is a dark room. One of these rooms is absolutely dark . . . . . the other three have a glazed opening into the kitchen in the next house, thus affording a little light, but no air and no privacy. The rents of these houses total forty-two dollars per month; before subdivision the rents totalled twenty-two dollars." Sometimes it is small hotels or old and roomy houses which undergo the dangerous transformation into common lodging-houses, usually overcrowded with foreigners, not necessarily poor, but quite ignorant of all laws of sanitation or of the risks which they and their neighbours incur by sleeping in overcrowded quarters. The sub-letting of such lodgings is a very lucrative business, and is usually carried on by aliens, who either pay a normal rent to the owner for the house and sub-let it to as many tenants as can possibly be crowded in, or else let out part of the house which they themselves own and in part of which they live in circumstances not calculated to render them very sensitive to the well-being of their tenants. Mr. J. S. Wadsworth, in his book, "Strangers Within Our Gates," gives instances of this crowding in Winnipeg. One man, he says, "managed to accommodate forty-three occupants in five rooms where only fourteen could hope to find sufficient atmosphere for healthy respiration." Another had twenty-four in one room, where only seven should have been. Again: "Yablonovish, a teamster, who owns his own house and several lots, lives with his family in two rooms and has five roomers. . . . The attic is full of pigeons," while "Klenbyel, his wife and six children, and from fifteen to twenty boarders, live in four rented rooms."

Some people still look to the erection of model tenement houses as the solution of down-town housing problems; but, judging from the experience of the European countries and also of New York, the housing of large sections of the population in tenement buildings is not only very expensive, but fraught with many serious physical and moral considerations. Certain it is that tenement buildings are inimical to family life, which is the backbone of a nation, and that the denizens of the "packing-case houses" never regard them as "home," while a perusal of any one of the many laws in existence for controlling the administration of tenement buildings in different countries and cities reveals, by the nature of the regulations which all find it necessary to make, some of the moral difficulties which result from herding many families in such close quarters.

But perhaps the most "damnable" form of overcrowding is to be found in the one-roomed dwelling as a family residence. Sidney Webb speaks of the "soul-destroying conditions of the one-roomed dwelling, which makes decent life impossible," and certainly both body and soul must be injuriously affected by life in a room, used night and day by persons of all ages and both sexes, and which is absolutely the only place for cooking, food-storage, toilet, washing and drying of clothes and people, eating, sleeping, and recreation. The lack of proper ventilation fosters disease, the lack of restfulness creates a thirst for excitement, and the lack of privacy leads to all the roads opening out from immodesty and want of self-respect. Thoreau tells us that "there are a thousand people lopping off the branches of an evil for every one striking at its roots." May it not be that we are spending money, time, and energy in trying to cleanse the endless streams of physical and moral degeneration which are fouling our national life, when we should be directing our attention to purifying the fountain-head of family life and home conditions?

One is apt to imagine that single-roomed dwellings are confined to the congested areas of large cities, but one has only to visit the shack-towns of the suburbs and the colonies of immigrants of different nationalities which form the "Little Italys," the "Little Hungarys," or the "China-towns," that are scattered about the country districts, to find sanitary conditions rivalling even those of Quebec itself. This type of slum can be seen in the Italian colony near Sault Ste. Marie, of which the following is the report of the provincial officer of health: "This colony is crowded into a lot of miserable shacks, filthy both inside and out; no cellars, no drainage, closets on the surface of the ground, vile beyond description; water from shallow wells, which were dirty and unfit for use, and most of them located within a few feet of the closets."

Enough has been said to convince even a prejudiced reader that the housing conditions of Canada are not ideal. It may be asked how these conditions came to be, and why the inhabitants of slums and shacks allow themselves to be robbed of such high rents. The answer to both these questions is partly to be found in the inexorable law of supply and demand. The richness and prosperity of Canada is attracting working-class immigrants hither at the rate of over a thousand a day. This is not the ordinary natural growth of population, where one baby is born into a home already existing, but it is a surging crowd, all requiring new homes, which they must find at once, and at any cost, because of the severity of the climate. Hamilton is a typical example of this process; during the last ten years it has experienced a great wave of industrial prosperity, due in the first place to the investment of large sums of American capital in the manufacture of agricultural machinery. This was followed by the introduction of other extensive industries, employing in the aggregate many thousands of operatives. "The expected results have followed. The demand for additional housing accommodation has become steadily more urgent and pressing, until every available four walls surmounted by a roof, that under normal conditions of city growth would never be accused of being a house, is eagerly seized upon and occupied at an outrageous rental."

The economic situation is at present all on the side of the greedy landlord, and, unfortunately, there are always some to be found who are willing to take an unfair advantage of the needs of their fellows. What is the remedy? We cannot fix rents, but we can, by constant inspection and wise by-laws rigidly enforced, see that a proper return of decency and sanitation is given for the rent obtained, without any fear that we are robbing the landlord or chief tenant of a fair interest on his investment. Many of the provincial and municipal authorities are beginning to realize their power in this direction. In most places the medical officer of health has the right to declare a house to be "unfit for habitation" and to order it to be made inhabitable, or, if *that* order is not obeyed, to close the house and placard it as "unfit." The difficulty in the past has been, not so much a want of housing by-laws, though these are described in some places as "crude and antiquated," but the power to enforce them, and this can only be done by an adequate, properly trained staff of inspectors who can investigate such property at least four times a year, or, better still, once a month, for, between such frequent visits, few evils would have time to grow acute. These inspectors would also endeavour, by advice and instruction, to increase the knowledge of sanitation among the tenants and to carry on the education in hygiene, without which no scheme for healthy homes will be complete in a land whose population is being augmented by so many immigrants of a low sanitary standard.

But in all towns of a growing country there is more to be done than merely to keep the centres free from slums. The outskirts are being developed daily, and the village of to-day is the crowded city of to-morrow. Great Britain and Germany have already passed legislation enabling local authorities to control the way in which property in their districts is developed, and Canada should not hesitate to follow their good example. So far as can be ascertained, British Columbia is the only province with any town-planning regulation in its municipal code. It is as follows: "All future surveys into building lots of property within a city, or of property which is contiguous to the boundaries of a city, by owners and others, shall be subject to the approval of the city engineer and the mayor when the city has a city engineer, or the approval of the mayor when the city has not a city engineer; and no plan of such survey shall be registered unless it bears a certificate of such approval, but such approval shall not be unreasonably withheld." The other provinces of the Dominion would do well to have some such long-sighted law with regard to existing cities and all alike should demand from new townships that, before they can obtain incorporation, they must submit some satisfactory plan of the general future development of the area as a guarantee that the mistakes of the past will not be repeated in the future.

RHEUMATISM IN THE CHILDREN OF VANCOUVER AND DISTRICT

By Harold Dyer, M.D., F.R.C.S. (Edin.), M.R.C.S., L.R.C.P. (Lond.), North Vancouver

VANCOUVER and the lower mainland have been settled just over twenty years. The best tribes of Indians seem to have preferred the "cold belt" and instinctively avoided this district, driving their most degraded types here to live, so I presume that with them, for some good reasons, this place did not hold its present reputation as a health resort.

Among the children here, rheumatism has impressed me as one of the most common and serious diseases met with. Children showing some of Cheadle's classical signs of rheumatism are numerous. Some show one or more of the signs in a marked degree, but the other signs are so latent that the rheumatic nature of the illness may not be diagnosed till, months or years after, a more typical rheumatic attack and the discovery of advanced heart disease give the clue to the previous illness. Some of the typical signs of rheumatism seen in other countries are uncommon here, notably chorea and rheumatic nodules. The local rheumatism is so often lacking in these two sensational symptoms that it fails to advertise itself as a local product should, and is therefore ignored by parents and doctor, as in one of my own cases, till unsuspected heart disease is found to have resulted.

Cheadle, in 1889, finally abolished the idea that rheumatic infections caused only inflamed joints, sour sweats, and pyrexia. He pointed out: (1) That children presented far more varied and severe lesions from rheumatic infections than did adults. (2) That the rheumatism of these children was as much hereditary as the tubercle of tubercular children; that is, that some children inherit a lack of resistance to rheumatism as other children do to the tubercle bacillus.

Poynton and Paine were probably the first to isolate and demonstrate the strepto-diplococcus, which, according to the virulence of the strain and the resisting power of the child, can produce such fatal injury in some or trivial discomfort in others. Having watched these two prepare their cultures from the inflamed pericardium and heart valves of children who had died in hospital during my term of residence, I have retained my faith in the reality of their rheumatic bacillus ever since.

In addition to Cheadle's classical signs, all other observers agree that rheumatic children are almost always nervous and emotional, though all the emotional children of this district are not necessarily rheumatic. Still gives a varied list of symptoms of rheumatism, namely, pains in the belly, headache, habit spasm, and wasting. Poynton (*British Medical Journal*, 1911; *Lancet*, October 28th, 1911) adds a long list. Lees adds important physical signs, namely, dilated heart, rapid pulse, and progressive anæmia with slight pyrexia, the first of which he emphasizes as an infallible feature of rheumatism in children. Not all children with dilated hearts have rheumatism, but every child with active rheumatic infection has a dilated heart.

Taking Cheadle's symptoms in detail as found on this coast:

1. PAINS IN THE JOINTS. These are often, but not always, present in children and rarely severe. One joint may be swollen and painful for weeks, thus simulating tubercular disease. A little girl suffered from a swollen, painful wrist for weeks. She had also anæmia, frequent sore throat, and a dilated heart. The joint quickly got well with rest in bed and salicylates. The muscles of the neck seem to be the site of rheumatic pains as frequently as are the hamstring regions.

2. ENDOCARDITIS AND PERICARDITIS. To these should be added myocarditis, as the heart muscle is found to be inflamed early in the disease.

A cardiac murmur is not often the first physical sign to show that the heart is affected in rheumatism. Dilatation of the heart weakened by rheumatic toxins has been laid down by Lees, and later by others, as the earliest sign. Owing to the greater pressure in the left ventricle, and because the mitral and aortic valves and adjoining heart muscle is usually more severely and earlier attacked by the rheumatic infection than the right heart, the left side of the heart is found to be the first to dilate. The size of the heart in a child with normal lungs can be accurately defined by percussion, and the results when checked by x-ray examination prove the accuracy of the method.

Dulness extending to the left of the V.N.L. indicates a dilated heart or very narrow chest. Poynton examined the hearts of thirty-five public school boys at random and found only two with cardiac dulness extending beyond the left nipple line. Of these, one had recently had influenza, the other was in the headmaster's house because he was a delicate boy. The same observer, out of forty-five cases under twelve years, examined in the surgical wards of a children's hospital, found nineteen with the left limit of dulness internal to V.N.L., eighteen in the line, and eight external to V.N.L. These, of course, were not perfectly healthy children. Cardiac dulness extending outside the left V.N.L. is pathological, but the accuracy with which it can be determined varies with the sense of tone and of touch, and the experience of the examiner. The pulse rate is generally rapid in proportion to the pyrenia. In a boy of eleven years, with a general pleuro, pericardial, peritoneal and endocardial infection, the pulse remained slow, 80-86, with fever, 103° F., and with a fall of temperature to 99° F.; on the fifth day the pulse fell to 54-58, very irregular, with dilated heart and extreme faintness and pallor on sitting up in bed. Dr. Mosler, of Berlin, describes a polyserositis with slow pulse, having had fifteen cases in eighteen months in his hospital. In practice one meets with so many pale, anæmic children, with dilated hearts and one or more signs of rheumatism, whose anæmia improves and whose hearts return to normal under sodium salicylate, sodium bicarbonate, and rest, that hospital teaching on rheumatism in children seems too gloomy. But the rheumatic bacillus is as virulent on this coast as in any other part of the world. The three cases quoted later, seen in one year in a small practice, have impressed me with the insidious, deadly disease which is in our midst, often unsuspected and unlooked for till "heart disease" is written in pulsating letters over the chest of the doomed child.

3. Pleurisy caused by the rheumatic diplococcus is not uncommon in children, often with some local pneumonia. Except for the pain, the symptoms are not so severe as the pneumococcus variety. There is dyspnœa with frequent cough, but no rusty sputum, and not the anxious, panting respiration of true pneumonia. Great thickening of the pleura, with absence of breath sounds, may simulate tubercular disease or empyema, as quoted by Still. I had one such case recently which I punctured for pus with the consent of another doctor. There was no pus, but a much dilated heart and flying joint pains next day called for salicylate treatment with immediate fall of temperature and rapid recovery. In these difficult cases the heart is found dilated to the left rather than the right. There is no true crisis, but the temperature gradually falls, or is kept up by joint pains, tonsilitis, or other rheumatic manifestation.

4. Tonsilitis. This is a very common local complaint, and with it is found a general pharyngitis. A dark red, congested area round the insertion of the tonsil is suggestive to me of a rheumatic tonsilitis. Often a big mass of inflamed cervical glands appears as a result of these rheumatic throats. I have seen several lasting from one to two months and enormous in size. They closely resemble tubercular glands, but in all my cases other rheumatic symptoms have been present. None of them have suppurated, and all have disappeared with time and anti-rheumatic treatment, except one boy who had them excised the day after his arrival in a southern city, my treatment of inactivity being severely criticized.

Some of the recent research in the relation of rheumatism to big tonsils, adenoids, and enlarged cervical glands, may be of interest to this city, where this condition helps to keep multiple specialists busy, and also leaves a little over for us suburban practitioners. Dr. Stengels, *Pediatrics*, 1908, naming intense anæmia as a feature, adds: "Tonsilitis, pharyngitis, and marked enlargement of the regional lymphatic glands are so common that he does not consider Still's disease more than a special variety of ordinary rheumatic infection." Poynton and Paine, *Lancet*, 1910, say: "The tonsils of children, victims of rheumatic fever and heart disease, were removed between the attacks and seared." The cervical glands in these cases showed moderate enlargement. Histological examination showed streptococci in the depths of these tonsils which, in culture, grew a pure diplo-streptococcus, which, injected into rabbits, produced arthritis and fatal, acute, aortic endocarditis. Meyer, in 1901, got the same result independently. Graham Forbes, in 1908, also grew a pure diplo-streptococcus culture from rheumatic tonsils. These facts make the removal of enlarged tonsils a less simple question than it used to be considered. If the tonsils are enlarged so that they merely impede respiration, the method of sheering off the greater part of them with a tonsillotome is quite effective. If, however, they contain in their deeper parts the bacillus of rheumatism, then complete enucleation of the tonsils should be done for repeated attacks of tonsilitis in rheumatic children. The weakened condition of the heart muscle, even without obvious valvular disease, as shown by dilatation and rapid pulse, increases the responsibility of deciding on and giving an anæsthetic. Possibly the relative frequency of deaths during tonsil and adenoid operations is due to chloroform acting on a heart already weakened and dilated by rheumatic toxæmia.

5. Erythematous Rashes. These, when associated with

dilated heart, rapid pulse, and a history of initial sore throat, usually mean rheumatism. I saw a girl of twelve who had bathed on a cold day in the Inlet a few days before. She had a patchy scarlatiniform rash and a sore throat which was getting better. Scarlet fever was suspected, but her heart was dilated with a sort of "hurry up" double second sound, rapid pulse, and tonsillar margin injected. After much questioning, she remembered pains in the neck and stiff arms the day after bathing and still had a stiff neck, as she thought, "from lying on it." A children's party was held in the house with no disastrous sequel. With rest in bed and sodium salicylate and bicarbonate, she recovered, though the heart remained dilated with altered first sound, in spite of rest in bed, till sodium salicylate was increased to grs. xv., three hourly, when temperature fell and she rapidly improved. Among my notes of children during the last few months are other cases with rashes and other rheumatic symptoms quickly disappearing with sodium salicylate and bicarbonate after they had persisted for some time untreated.

6. NODULES. These are said to be very rare on this continent, but I have secured photographs to show that they are sometimes present, and, as always, indicate a severe infection with heart lesions.

7. WASTING should be added to the list of common local symptoms. Several small children have been brought to me, pale and wasted, and I have found the typical dilated heart, rapid pulse, and history of frequent sore throat and odd joint pains, and always feeling tired. These children fatten on sodium salicylate and sodium bicarbonate, and rest, as other children will, on maltene and cod liver oil.

TREATMENT. Spraying of the tonsils frequently with an antiseptic solution is the first point in treatment, as by this one of the sources of entrance to, and infection of, the body by the microbe, is attacked. Sodium salicylate is the most effective drug for rheumatism in children, as in the case of adults. Dr. Lees gives enormous doses, two hundred to four hundred grains a day to children in severe cases. With these enormous doses two precautions are necessary: (*a*) regular and free action of the bowels; (*b*) double the amount of bicarbonate of soda. The soda has two uses. It prevents acidosis poisoning which would follow such big doses of sodium salicylate alone. Also, it neutralizes those acids, formic and acetic, which are produced in the growth of rheumatic cocci cultures. These acid toxins are probably a cause of the early dilatation of the heart, since Gaskell found lactic and other acids caused dilatation of the frog's heart and arrest in diastole. The soda bicarbonate will also correct the persistent high acidity of the urine found in rheumatic fever. In practice the difficulty in the use of sodium salicylate and sodium bicarbonate is the nasty taste and upset to the digestion.

Aspirin will relieve pain, but it is no better than sodium salicylate, and is useless for severe infections, for it cannot be given with sodium bicarbonate, as a poisonous product is formed. I once used four grains of aspirin with eight of sodium bicarbonate, two hourly, in a child. After ten doses in thirty-six hours he was very ill and passing green urine. The aspirin was at once changed to sodium salicylate, grs. v, sodium bicarbonate, grs. x, and in a few hours his condition improved and the severe pains in muscles and joints disappeared.

In the subacute but dangerous cases with nodules, heart disease, increasing pallor, rapidity of pulse, and slight fever, treatment is very difficult. Lees reports splendid results with big doses of sodium salicylate and sodium bicarbonate, but he works with children in hospital and skilled assistance. In private practice the loss of appetite, vomiting, and the sick child's hatred of medicine, makes the treatment difficult to carry out. In two cases I have given a polyvalent antistreptoccus vaccine with what seemed a good result at first, but fourteen days later the boy developed severe chorea. Dr. Poynton, kindly replying to me in August, 1911, wrote that he had seen no good from its use in acute cases.

The three following cases illustrate the virulence of the local rheumatism:

1. F. P., four and a half years old. Had typhoid one year ago. No other illness. Taken ill August 25th, 1910. Seen by me August 26th. Boy delirious and noisy last night, vomiting. Headache and stomachache; very dirty tongue. Throat clean, but had a sore throat a day or two before. Castor oil given. Temperature 102°, respiration rapid. Heart not dilated to the left, right margin not percussed.

August 27th. Boy very ill. Temperature 100° F., respiration 40. Pain in left neck or mastoid region. Lungs nil. Very costive.

August 28th. Temperature 100·8° F. Boy very droswy and ill. Tongue dirty. Spleen easily felt. Pulse very rapid and feeble. Moved to hospital. Heart dulness right side R.V.N.L.; left side L.V.N.L. Well marked whiffling systole murmur conducted into axilla. Sounds loud. Frequent vomiting. A few moist râles at the base of left lung. Sodium salicylate grs. v, sodium bicarbonate grs. x, given twice hourly.

August 29th. Very ill. Systole bruit quite gone, but rapid, banging heart sounds. Urine still very acid. Temperature 100°, respiration 40. Pulse very rapid. Heart dulness. Right border R.V.N.L. Left border one inch out to L.V.N.L. Cyanosed and gasping for breath. Two hours later pale and quiet. Bled from anterior jugular vein. Death soon after.

Post Mortem. Pericardial sac not distended with fluid. Tricuspid valve reddened at its edges with gelatinous exudation. Mitral valve inflamed along the edges and with gelatinous exudation. In one spot a black tuft of vegetation or hæmorrhagic exudate was seen. Papillary muscular attachments in both ventricles reddened. Aortic valves slightly thickened and red. Muscular walls soft. Lung congested at the extreme left base.

This boy was in apparently good health August 23rd and dead August 29th from acute heart failure, due to rheumatic infection. The right side of the heart, being attacked first, or at the same time as the left, by the rheumatic infection, dilated almost at once. The thicker wall of the left ventricle did not yield so rapidly, probably because the poisoned, dilated right ventricle had been too feeble to drive the blood through the lungs into the left ventricle and thus distend it. Hence the unusual physical sign of a rheumatic heart dilated to the right and not to the left till just before death, when both ventricles seem to have become mere flabby bags with no contractile power, the removal of blood having been quite without effect.

Some would say that this was a case of malignant endocarditis. If so, the difference between a streptococcal infection of malignant and one of rheumatic endocarditis, must be defined. The writings of most authorities agree that they are the same, with different degrees of virulence, or that malignant endocarditis is most often grafted on to a valve scarred by rheumatic lesions. Can the pains in the neck and arms and the typical sour sweats be classified as anything else than rheumatic, when associated with valvular heart disease in a child of rheumatic parents?

2. This case I give because the severe albuminuria so dominated other symptoms that the condition of the heart was considered a a complication.

Boy eleven years old. In good health till a month ago. Very pale and wasted. Aphasia, perhaps hysteria. Attacks of dyspnœa at night. Much albumin in the urine. Temperature 100°, respiration 20, pulse 96. Heart dilated more than one inch out to L.V.N.L. "To and fro" apical murmur. Pulmonary second sound very loud.

The boy improved steadily on sodium salicylate and sodium bicarbonate, the albuminuria rapidly disappearing, but he is still a thin, feeble-looking boy.

3. The third case was a boy whom I saw four and one-half years ago, with an attack which I told the parents then was rheumatism. For some time previous to June, 1911, he had had pains in the limbs. He had a bad sore throat two days before, and a very tiring day before I saw him. He passed through a very severe illness of five days which at first seemed a double pleurisy and later a general peritonitis. The abdominal pain was extreme, the abdomen rigid and tender, with both legs drawn up. Tongue filthy. Respiration 40, pulse 80 to 86. Much albumin in the urine. The heart dulness extended far to the left, and its pulsation showed over a wide area. A faint systolic murmur could be heard and loud pulmonary second. Sodium salicylate grs. vii and sodium bicarbonate grs. xv were given, three hourly, and ice bags applied continuously to the abdomen. With the fall in temperature and the cessation of pain, the pulse fell to 56 to 60, very irregular, with extreme pallor and exhaustion if the boy sat up. Gradually this slow pulse increased in a month to a persistently rapid one of 90 to 110, with a temperature only just above normal. A loud, well-marked, systolic murmur was now present, with dilated heart and pains in the joints.

Sodium salicylate grs. xv, sodium bicarbonate grs. xxx, were given, four hourly, at this time, as well marked rheumatic nodules appeared on the back of the head, hands, and knees. For weeks the boy lay feeble in this condition. Urine now free from albumin, but persistently acid. Leucocyte count 16,000. Sodium salicylate and bicarbonate stopped and polyvalent vaccine (streptococcal) given. Appetite improved greatly at this time. Vaccine repeated July 20th. August 1st, pains better, pulse 78, condition good, but chorea has started on the right side; sodium salicylate and iron given. August 17th: Severe chorea; speech impossible; sleep and feeding difficult. Two nodules reappeared in the hand. Sodium salicylate and sodium bicarbonate continued. Gradual improvement till January 1st, when he left, almost completely well except for systolic murmur and dilated heart.

Since writing this paper I have met with three more cases of heart disease in children, natives of this district, who have lived here all their lives.

PERSONAL REMINISCENCES OF LISTER

By A. E. Mallock, M.D., Hamilton

THERE is nothing I might say in general about Lord Lister's work with which you are not already familiar. I shall therefore confine myself to what I saw of him and learned from him during my student days in Glasgow.

I attended Mr. Lister's lectures on the science and art of surgery in Glasgow University during the sessions of 1864-65 and 1865-66, and his course on operative surgery during the summer sessions of 1865-66. I well remember how his first lecture fascinated me; his subsequent lectures strengthened still further that impression. He spoke so plainly and expressed himself so simply that there was no trouble in taking full notes or in understanding what he meant.

The subject matter of his lectures was so interesting and attractive, consisting as it did in general of his own observations and experiments, that no one ever thought of absenting himself from the class-room. His words, his tone of voice, and quiet dignity of bearing, accompanied in general with a serious expression, convinced all that his heart was in his work, and, more than that, that our interests were his interests. His students worshipped him.

The pathology we learned in Glasgow University could be summed up by his lectures during the first three months of the session on coagulation of the blood, on active and passive congestion, and on the relation of the nervous system to it, which led up to, and embraced, the subject of inflammation and its results, supplemented by Paget's lectures on surgical pathology, which he recommended to us, and his many references to the work of John Hunter.

Leading up to the subject of his great work, he insisted that granulation tissue only secreted pus when irritated; and that the common cause of the irritation was decomposition arising from the presence of air; that the decomposition, which could be recognized by its odour in the bloody and serous discharge from an open wound twenty-four hours old, arose from the same cause; that it was not the air itself, nor any one of the gases that composed it, but something present in the air; and that were this something excluded,

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Read before the Toronto Academy of Medicine, April 2nd, 1912.

healing would go on without inflammation; that amputations and compound fractures would heal more kindly; and that the awful mortality from them as commonly treated would be greatly lessened. He may have alluded to Pasteur's work in my first session, but in my second session he announced that this something in the air was a living germ, similar to those described by the great French scientist.

We students were not surprised, therefore, when we learned during the autumn of 1865, that in a case of compound fracture Mr. Lister had used carbolic acid in its full strength to prevent decomposition, and had done so with success; the essence of this treatment being to kill all germs which had entered the wound with the air, and to prevent any subsequent entrance.

It would take too long to give the reasons which led Mr. Lister from the experience gained from succeeding, and still more successful, cases to modify his method of using the acid by lessening its strength; suffice it to say, between the autumn of 1865 and that of 1868 the crude acid was first replaced, as an injection, by the acid dissolved in boiled linseed oil of the strength of one to four; and later by an injection of a one to twenty watery solution of the acid. He also changed the outward application from the crude acid to the acid in boiled linseed oil of a strength varying from one to four to one to eight; then to a carbolized putty; which in turn was succeeded by a carbolic and lead plaster; and finally by a mixture of shellac and carbolic acid, spread on cloth, the surface of which was coated with a thin film of India rubber to prevent its adhesion to the skin.

While acting as Mr. Lister's dresser during the year of 1865, I saw cases of hospital gangrene of varying degrees of intensity; cases of pyæmia, and erysipelas, and of suppurating stumps, from the flaps of which thin, offensive pus poured in abundance. I have held the limb in one hand, and the flaps, from which all the stitches had been cut out, in the other, while Mr. Lister poured kettleful after kettleful of hot, diluted Condy's fluid between the flaps to cleanse them; the stump being finally covered over with a linseed poultice. I doubt if any of the members present have ever seen such cases.

The mortality from open wounds in Mr. Lister's wards had been frightful, previous to the antiseptic treatment. In this respect, however, it did not differ from that of the continental hospitals or others in Great Britain. At that time simple fractures of arms and legs were often kept in the hospital to reduce the number of beds that could be called upon to receive cases of open wounds. Mr. Lister's acute ward was closed once about this time to be thoroughly cleansed and purified, in an attempt to avoid these scourges. Early in 1867, after the more general adoption of the antiseptic method, Mr. Lister found that acute cases of hospital gangrene, and cases of pyæmia and erysipelas, had been stamped out, and that he need no longer dread the presence of open wounds; and that he could safely increase the accommodation of the wards by placing mattresses between the beds.

The antiseptic treatment was also employed in the treatment of large psoas and lumbar abscesses, as well as in collections of pus connected with diseases of the joints. Many of these cases were to be seen in the wards. They healed kindly, without the least sign of the old dreaded hectic fever, with its very frequent fatal results. Was it to be wondered at, after seeing such a miraculous change in the health of the wards, and the lessened mortality, within the short period of two years, that it was believed that it would be almost criminal to allow cases that should be treated antiseptically to be otherwise dealt with?

I remember, when I was Professor Leishman's house surgeon, being called in the dead of night to a consultation with Mr. Lister's house surgeon, and other house surgeons and physicians, on a case of femoral aneurism, to consider the advisability of an immediate operation. Mr. Lister was then away on a holiday, and as the surgeon acting for him did not practise the antiseptic treatment, it was decided that the operation should be performed that night. Mr. Lister's house surgeon then and there operated with our assistance. I believe this was the first case of antiseptic ligaturing of an artery, in its continuity, in man. I do not remember anything of its subsequent history, nor have I seen the case alluded to.

During the spring of 1866, when I was in my third year, and was a dresser in Mr. Lister's acute ward, I also acted as his house surgeon for a period of two weeks, and lived in the infirmary. This service procured for me Mr. Lister's promise that he would give me an appointment as his house surgeon after graduating. At the same time he referred to the number of cases of surgery he had had in his wards and in his private practice during these two weeks, and said he doubted if any other surgeon in Great Britain had had more. This was the first and only allusion I ever heard him make of a personal kind.

From the spring to the autumn of 1868 I acted as his house surgeon. The special cases that I remember with reference to the antiseptic treatment that occurred during this period were: First, a very bad case of ununited Pott's fracture, with displacement of the foot backwards. Mr. Lister, under the carbolic acid and oil method, cut down upon, and broke through with bone forceps, the fibula and the tibia, opening by this latter procedure into the ankle-joint; then by the use of pulleys he forced into position and restored the contour of the limb. The wounds healed without constitutional symptoms and with the most satisfactory result.

The second case was that of a compound fracture of the leg, treated by me during Mr. Lister's absence in the Isle of Wight. This was the first compound fracture ever dressed with carbolized shellac plaster. While demonstrating this case to a celebrated American surgeon, who was accompanied by Dr. G. B. McLeod of Glasgow, and who apparently refused to be convinced of the benefits arising from the antiseptic treatment in other cases that had been shown to him, and doubted a statement of mine regarding this case, I lost my patience and refused to show him any more cases. Upon reporting this incident to Mr. Lister I was greatly relieved by his assurance that I had acted rightly. Fully fifteen years later, while visiting a hospital in the city in which this surgeon had practised, I was asked by one of the attending surgeons if I had been upstairs to see the "cocksure surgery" which had just then been introduced.

The third case was one of loose cartilage in the knee-joint, which I had seen in the dispensary and brought into the wards. Mr. Lister operated, and kindly allowed me to report the case in the *Glasgow Medical Journal.* These three cases are noted in the "Collected Papers of Joseph, Baron Lister."

I saw very little of Mr. Lister as an operator, for as his house surgeon I had to administer the chloroform. It was known, however, to all of us, that he was a skilled, dexterous, and most careful operator; that he was prepared for all emergencies, was most resourceful, and that his only thought was the welfare of his patient. It was not his nature to play to the gallery. I may say in addition that while operating he perspired very freely.

The visiting hour in the Royal Infirmary was 8 a.m., and Mr. Lister frequently spent two hours in the wards dressing his most important cases. Nothing escaped him, and everything received his attention. He taught his students that there was a right way and a wrong way of doing everything, from the dressing of a case and bandaging it to the proper insertion, finally, of the pin to fix the bandage; and that the least complaint of pain or uneasiness demanded immediate attention.

It was a pleasure to see the smile on each countenance when Mr. Lister entered the ward, for each patient knew that he or she would receive every attention. They trusted him thoroughly, and readily submitted to anything he asked of them, knowing that it would be for their benefit.

Besides being the discoverer of the antiseptic treatment which revolutionized surgery, Mr. Lister was then in many other respects far in advance of his contemporaries. For example, during the summer of 1868 he told me that he was going to visit Wales to see a patient suffering from cancer of the breast, in a very advanced stage of the disease, who had been refused operation by a great Dublin surgeon, by himself, by Mr. Syme of Edinburgh, and by Mr. Ferguson of London. Learning that she was about to submit to the treatment of a "plaster curer," he hoped to induce her to return to Glasgow. Subsequently he operated on the case, exposing the whole of the axilla, by section of the pectoral muscles, and removed all the glands, fat, and cellular tissue, doing what is now called "the radical operation." In 1873, in answer to my inquiries, he told me there had been no return of the disease.

Again, he expressed the opinion that the treatment of senile gangrene would be revolutionized. At that time amputation was generally prohibited, but with the prevention of inflammation by the employment of the antiseptic treatment he felt sure it could be done safely.

And still again, I have seen him, while performing his operation for caries of the wrist, remove the diseased cartilage of one or more of the metacarpal bones and scoop out the marrow, a practice which was brought prominently before the profession many years afterwards.

Many a student of my day, reading of the honours conferred on his old teacher (late though they were in coming), must have seen the page blurred before him, and, while returning thanks for the great privilege that had been his, regretted that he had not made better use of it.

Case Reports

INTERESTING CASE OF ATTEMPTED SUICIDE IN THE CANTON HOSPITAL

PATIENT, named Li Lin Wong, thirty-two years of age, a native of San Wai, resident in Canton, and a broom-maker by trade, failed in business. He tried to enlist in the Republican Army, but was not accepted. Just before the Chinese New Year, the fiscal end of the year, he decided to commit suicide with the aid of a razor. There is no doubt about the sincerity of his efforts, or the keenness of his razor. He was taken to a Chinese hospital, but the native physicians in charge sent him on to us.

Upon arrival at the hospital at noon, he was immediately placed upon the operating table. He was recovering from shock—pulse rapid and wiry, skin moist and cold—and was conscious, though complaining of severe pain. Uncovering the abdomen, my eyes rested upon yards of small and large intestine, stomach, omentum, and most of the liver, completely eviscerated, mixed with a great deal of blood, rubbing against his dirty winter clothing, which had probably not been changed for some time. It occurred to me that it would make an unusual photograph, but I decided to give him every possible chance of recovery by losing no time. Across his abdomen were eight gashes. Two of the wounds, measuring each twelve inches in length, completely opened up his abdomen from side to side. The upper one severed the lower costal cartillages, the abdominal muscles, the peritoneum, and made four long and deep cuts into the substance of the liver. There were also several wounds in the stomach, down to the mucous membrane, but fortunately not through. The lower cut severed muscles and peritoneum, but did not injure the adjacent abdominal organs. Stomach and bowels were distended with gas.

The patient's body, with the exception of the site of operation, was warmed with blankets and hot water bottles. Chloroform was administered by one of our resident physicians, Dr. Lo, and another one, Dr. Kwok, assisted in the operation. All of the abdomen accessible was thoroughly washed with Synol liquid soap and water, then with carbolic acid solution (1-100) and finally thoroughly rinsed with sterile salt solution. The eviscerated organs were carefully washed with weak carbolic acid solution to remove the dirt, and then thoroughly rinsed with hot normal saline. The wounds in the liver and stomach were then sutured. The air was manually expressed from the stomach, escaping by way of the œsophagus, and the difficult task of restoring the organs to their proper places was commenced. The intestines extruded through the lower wound were first replaced, and that part of the abdomen closed with through-and-through silk sutures, at considerable intervals, in order to expedite the operation, an opening being left at the side for drainage. To replace the contents of the upper part of the abdomen was no easy task. We finally succeeded in doing this, and I pulled down the omentum, covering the other organs. While my assistant kept the abdominal contents in their place, through-and-through sutures of silk were inserted at intervals of an inch, and clamped with artery forceps; then, the assistant trying to approximate the edges of the wound by traction with forceps, and at the same time attempting to maintain control of the unruly distended bowels, I tied the sutures. It was absolutely impossible, however, to bring the margins of the wound together, an interval of about an inch and a half being left, showing the omentum. This gap was covered with gauze and gauze drainage inserted. The operation was completed with all possible haste, and the patient, though on the charity list, put into a private room, given strychnin and a rectal saline.

In the early afternoon I saw the patient again and he was doing well, having come out of the anæsthetic easily.

At five o'clock, going into the hospital again to see another patient, I was met by one of the orderlies who informed me that the suicide case had just cut his throat. The attendant having left the room for a few minutes, he had broken a drinking glass, which was on the table, and with a piece of it made a deep gash through the middle of the neck, about an inch and a half wide, perforating the crico-thyroid membrane. When I saw him he was breathing through both nose and the self-made tracheotomy wound. Fortunately he had not made this wound as extensive as the abdominal ones, and thus saved injury to the carotid vessels. In cleansing the wound a few drops of solution entered the trachea, but were coughed up.

February eleventh—second day—Temperature, morning 99, evening 99·4; pulse 140; respiration 18; complaints of pain. Morphia given at night.

Third Day—Morning, outside dressings changed; temp. 99·4;

pulse 140. Afternoon, one quart of hot normal saline solution given intravenously, the left median basilic vein being the one opened. Evening, pulse 112.

Fourth Day—Dose of salts given; fluid diet; patient taken to the operating room and given a few whiffs of chloroform while all drainage was changed and the wound in the neck freshened and sutured. Temperature 99·4; pulse 120.

Fifth Day—Intravenous, right median cephalic vein. Temperature 99; pulse 120. Small doses of strychnin commenced; knees drawn up; patient becoming noticeably emaciated.

Sixth Day—Dressings changed; some discharge. While attendant was out of the room patient got out of bed, walked to the door and sat on a bench outside, without any coverings except his white hospital pyjama suit. Pulse 90; temperature 99·3.

Seventh Day—Taken to operating room and all drainage changed, without anæsthetic, though patient complained of the pain. Some pus in the lower wound. Both large wounds irrigated. Smaller wounds healing by first intention. Upon return to bed dose of salts and rectal saline given. Temperature 99·1; pulse 140, coming down later. At evening visit found patient lying upon cold tile floor, on a blanket, with knees drawn up, groaning, refusing to be returned to his bed.

Eighth Day—Dressings changed morning and evening. Considerable pus in both wounds, which were irrigated. Omentum inflamed. Microscopical examination of pus showed staphylococci in abundance. Urine normal. All sutures which had not sloughed out removed. Lower wound healed except about two inches at right side, where drainage had been inserted. Upper wound open, ten inches long by two and a half wide showing the omentum, covering the stomach, moving up and down with respiration. The wound granulating. Cough developed with a great deal of expectoration. Expectorant mixture given Q 4 H.

Ninth Day—Dressings changed morning and evening. Rectal saline given. Pulse 114; temperature 99·2. Expectoration profuse. Knees constantly drawn up. Anxious expression on patient's face. Body almost a skeleton.

Tenth Day—Very poor night. Dyspnœa. Chest examined, lungs clear. Profuse expectoration, thick. No appetite. Dressings changed morning and evening and wounds irrigated. Much pus.

Eleventh Day—Bowels kept moving daily.

Twelfth Day—Saline intravenous given in left internal saphenous vein, above the knee. Change of locality of each intravenous due to bad healing of the wounds. Pulse slowing and becoming more regular.

Fourteenth Day—Given beef juice, one ounce t.i.d. Got out of bed and walked to the corner of the room to urinate.

Sixteenth Day—Evening dressings discontinued. Appetite improving.

Twentieth Day—Temperature normal. Pulse 90. Voracious appetite. Expectoration lessening. Promises not to attempt suicide again. Pulse 84. Enormous granulating gap to be closed up by operation later.

J. OSCAR THOMSON,
Acting Medical Supt., Canton Hospital.

Editorial

THE CANADIAN MEDICAL ASSOCIATION

THE approaching meeting at Edmonton, on August 10th to 14th, calls for some reflection upon the functions of the Association and how these functions are being fulfilled. As an aid towards the development of a distinctive type of medicine in Canada, there can be no doubt as to the part that might be played by a strong, national association. The meeting together of some of the country's best men in serious discussion, can result in nothing but good. Several types of practitioners should engage in the various sectional discussions to ensure the greatest benefit. The vast clinical experience of the older men should be one of the most valuable assets of the Association. This should be particularly true of those who have had access to the public wards of our hospitals, with their more or less carefully taken case records. The clinical material thus piled up, if carefully digested by the men more or less retired from the heat of active practice, is of almost incalculable value. The enthusiasm and accurate reading of live young men also has an important place.

To these should be added the exact scientific knowledge of the laboratory, and also the new things discovered by those who do research work in some of its many forms. Added to all these, should be the enlightened observations of the general practitioner, who is by no means the least of all.

In addition to the serious discussion of disease and its cure, there is need for attention being paid to more general problems. The aid given by the Association in the last two or three years towards securing a Dominion license, has been of great value. Indeed, without the unity of spirit secured through the Association, the Roddick Bill would probably never have become an accomplished fact.

Many general problems might be mentioned. One is particularly worthy of note, however; namely, medical education. To have a good profession throughout the Dominion, we must provide good training. A careful enquiry into the question of supply and demand would be a guide to a decision as to how many schools we should have in Canada. If there are not enough, more should be started. If we have too many, some should be closed. And it is quite within the jurisdiction of the Association to enquire, through a carefully chosen committee, into the clinical facilities available for each of the schools now in existence. What would be of perhaps greater importance regarding medical education, would be a careful study of the curriculum as it is usually laid down. It is open to serious question whether the course is well balanced in all its parts. The amount of time spent on gross anatomy may be out of due proportion when the "body in action," or physiology, is given its fair share of time. The great importance of a study of the inter-relationship, for example, of the ductless glands, may have greater value to the practitioner than has the definite knowledge usually demanded regarding the bones. The amount of time spent in studying sections of pathological organs under a microscope may be somewhat out of proportion to the time spent on the pathological chemistry of the body. An exhaustive review and careful study of the whole problem of medical education by a committee of this Association might prove of great value.

To pass on to a review of the many features of the Association as it exists, several points come to mind. Each year the question comes up, how did the meeting compare with the previous one? And it is usually answered by a reference to the enrolment. But this answer may be, and probably is, very wide of the mark, for the enrolment at the business office really gives no definite idea of the number actually in attendance in the different sections throughout the whole meeting. This is the real test, so far as members go, and if we mistake not, is oftentimes most disappointing. The actual number of hours spent in real, genuine work is, after all, the only thing that counts. The success of any section will be assured if each member will be in his place from 9 a.m. till noon, and from 2 p.m. till 5 p.m. Desultory attendance is not only useless, it is also distracting to those who are punctual.

Whilst we are referring to faults, it would be well to state that valuable time is lost during the day in entertainment. What really energetic, enthusiastic student of medicine will cross Canada for a three days' meeting and gladly give up one whole half day to go to a picnic? There should be six hours a day good, genuine, hard work, or live men will not attend. Enough time during the day will be left for such social meeting together as will be of mutual benefit to friends coming from distant parts of the Dominion.

MEDICAL INSPECTION OF SCHOOLS

THE necessity for the medical inspection of children in public schools is shown very strongly by the report of the Montreal medical officer on the physical condition of 59,000 children attending schools in that city. The report shows that of this large number 32,000 pupils were physically sound, while 27,000 had complaints of various kinds. One hundred and sixty-seven pupils were found to be suffering from adonitis; 1,789 had adenoids, 132 suffered from headache; 900 from debility; 12 from spinal troubles; 67 from deformed limbs; 19,864 from decayed teeth; 17 from heart trouble; 603 from throat affections; 195 from ear troubles; 957 from skin diseases; 903 from diseases of the eye; 229 from minor sores; 418 from bronchitis; 225 from measles; 6 from diphtheria; 84 from itch; 58 from impetigo; 174 from mumps; 2,000 from vermin. Pupils to the number of 1,416 were sent home for various causes of illness, etc.; 2,140, who had not been vaccinated, had to submit to the operation; 13,572 previously vaccinated were examined.

The report of the chief medical inspector for Toronto, shows that during March there were 1,833 medical inspections made in the public schools of that city; there were 920 special physical examinations, 1,504 readmissions after illness, 1,487 defects found, and 896 complete physical examinations.

The principal defects were: defective vision, 115 cases; enlarged tonsils, 488 cases; defective nasal breathing, 281 cases; carious teeth, 1,156 cases.

The number of children excluded for contagious disease was 135.

The total number of inspections of all kinds was 75,734. The total number of instructions given was 20,415, and of treatments, 1,669.

THE ONTARIO MEDICAL COUNCIL AND OSTEOPATHY

THE Ontario Medical Council, true to the old adage, has in its hour of misery, selected a strange bedfellow. The miracle of the lion and the lamb being found in harmonious relations has been outdone, the puzzle being to say which is the lion and which the lamb. The osteopaths, under the protecting wing of the Medical Council, almost succeeded in passing legislation that would have enabled them to register in the Province of Ontario, and it is by no means certain that, with the encouragement already received, they will not be able to obtain their desire.

A committee of the Medical Council boldly championed the cause of the men and women who had qualified at American colleges of osteopathy, so relentlessly exposed in the Carnegie Report, and the argument justifying such a course was that it would enable the council to hold the whip hand in dealing with the irregular practitioners. Just how this control was to be secured has not been made plain, and just how the honest medical student was to be compensated for the outrage inflicted on him is a greater mystery still.

The last meeting of the legislative committee took place before as motley a collection of representatives of the various cults, fads, and fakes in medicine as it would be possible to gather together, while those who have the true interests of the profession at heart, sat quietly aside, plainly disgusted with the attempt to drag the traditions of an honourable profession in the mire. Evidently the jangle between osteopaths and divine healers, chiropractors, and bed actors, was too much even for a legislative committee, and they seemed quite willing to adopt President Falconer's suggestion that the bill be withdrawn, for this session at least.

It is only too apparent that if the osteopaths succeed the doors must be thrown open to every species of charlatan in the country. If so, let us have medical free trade at once, rather than pretend to establish a standard that can have no claim to being an honest guarantee that a man is qualified to practise medicine.

It is high time the universities of the province stood together to fight the foe that is threatening the very existence of medicine. The pathetic part of the situation is that the real foes of the medical profession are persons who have been elected by the practitioners of the province to represent them. These are hard words, but they are none the less true. Let us hope that before the Ontario legislature meets again, the good elements in the council (and there are good elements in this body) will come to the fore and adopt common-sense methods for dealing with the situation.

INEBRIETY IN ONTARIO

IN the year 1898 an Act was adopted in England called "The Inebriates' Act." This Act provides that when a reformatory for inebriates is established by a county or a group of counties and certified to by the government inspector, it becomes a "Certified Reformatory" under the Act, and the entire expense of maintenance is assumed by the government. This action on the part of the government has accomplished what it was designed to accomplish; namely, it has promoted the establishment of reformatories, there being now in England alone ten "Certified Reformatories," whereas there were two only before the Act came into operation.

Two governmental reformatories have also been established—one for men and one for women—for the custodial care of incorrigible cases removed from the Certified Reformatories where they have failed to respond to reformatory treatment, and have not been amenable to discipline.

In 1890 a Prison Reform Commission was appointed by the Ontario government, one of the instructions being to report upon the question of drunkenness in the province. In the report of the commission it is recommended that two reformatories be established in Ontario,—one in the eastern part of the province and one in the west. In 1892 a Prison Reform Conference was held in Toronto, which was attended by certified delegates from thirty different organizations, including Provincial Church Courts, the Ontario Law Society, and the Ontario Medical Association. This conference endorsed most heartily this recommendation of the establishment of reformatories for inebriates.

In 1894 a deputation from the Ontario Medical Association waited upon Sir Oliver Mowat, who was then the premier of Ontario, urging him to act upon the recommendation of the Prison Reform Commission with respect to the establishment of one or two reformatories in the province. The premier in reply said, in effect, that he realized fully the great need of reformatory treatment for the unfortunate drunkard, but that his government was not prepared to undertake the entire expense involved. In case, however, the initiative should be taken by voluntary effort,—by municipalities or by the benevolent public,—the government could be relied upon, he affirmed, to give liberal aid thereto. When Sir G. W. Ross was premier, he gave a large deputation practically the same answer, and, at his request, a bill was drafted, printed, and approved by him and his colleagues, in which government aid was provided to promote the treatment of inebriates by municipalities or by the benevolent public. The bill was never presented to the House, however, and, unfortunately, this important matter has never been brought before the present government.

For a number of years the Inspector of Prisons and Charities for Ontario, has been urging the Toronto authorities to make more adequate provision for gaol prisoners. Grand juries have also reported, from time to time, for several years, against the overcrowding in, and the faulty construction of, the Toronto gaol. After this long delay, however, action has finally been taken by the city council. A farm of over four hundred acres has been purchased, about fourteen miles from Toronto, and is being fitted up, partly as a farm colony for inebriates and partly as a reformatory for first offenders generally. This action, though long delayed, is most gratifying, as such an institution, properly managed, should be the means of restoring to useful citizenship a good percentage of the more hopeful class of cases, whether inebriates or not. Doubtless efficient means will be adopted whereby the two classes will be kept strictly separate.

The Ontario government, encouraged by the phenomenal success of the prison farm at Guelph, adopted an Act at the late session which was brought to a close on April 16th, which authorizes the establishment of an industrial farm, by a county or a group of counties in the province, similar in character, and with the same object in view, as that now being established by the city of Toronto. This forward movement will be an object lesson for the other provinces and it is devoutly to be wished that they will not be slow to profit by it.

Dr. Rosebrugh, who is medical officer of the Ontario Society for the Reformation of Inebriates, and was a member of the Prison Reform Committee appointed by the Ontario government as long ago as 1890, is doing a most commendable work in urging upon the public the importance of these measures.

HOSPITALS IN ONTARIO

ACCORDING to the forty-second annual report upon the hospitals and charities of the province of Ontario, there are now seventy-nine hospitals in the province. In addition, there are thirty-six refuges, thirty-one orphanages, three homes for incurables, two convalescent homes, two magdalen asylums, twenty-nine county houses of refuge, and six sanitaria for consumptives.

During the year ending September 30th, 1911, there were fifty-eight thousand and ninety-eight patients under treatment in the hospitals of the province, not including those regarded as outdoor patients. The provincial grant to hospitals amounted to $180,822.90 and the total amount of revenue received was $1,607,518.62. There was a larger number of patients under treatment than ever before, and the total expenditure was $2,049,797.39, of which $456,177.26 was on capital account.

These expenditures clearly prove that the work the hospitals are doing is appreciated by the public, and the past year has been one of exceptional progress. There has also been a larger expenditure for building in connexion with the hospitals, and the necessity for having fire-proof construction is becoming more generally recognized.

In the matter of local charities, it is felt that much more might be accomplished if some system of organized co-operation were established. To quote from the report of the provincial secretary: "The necessity of having in every city and large town a system of organized charity is more than ever realized. Too often there is a serious overlapping in our local charities, which might be avoided with great economic advantage. Indiscriminate relief-giving undoubtedly is a more potent factor in creating and perpetuating pauperism than anything else carried on in the name of charity."

The establishment of municipal sanitaria is strongly advocated. Far from being a menace to the community, the report states: "The establishment of these local institutions will not only effect a cure, or improvement, in patients under shelter, but one of their great missions will be to teach a proper mode of life to the community in general, and to the consumptive in particular."

In addition to the provincial institutions mentioned, there are forty-one city refuges and homes in Ontario which receive government aid; the total population during the past year in these institutions was five thousand nine hundred and ninety-two and the total expenditure for the maintenance of these refuges amounted to $402,839.35—towards this expenditure $83,932.09 was contributed by the government. During the year, thirty-one orphanages received government aid, and these institutions had a total population of four thousand nine hundred and eighty children.

CALGARY ISOLATION HOSPITAL

THE Calgary *Herald* gives an account of conditions existing in the present isolation hospital of that city, which reads somewhat as follows: The hospital consists of a barrack-like building, practically bare of furniture, with heavily barred windows and with no way of escape in case of fire. In this building are confined three women, three young children, and five men, all suffering from small-pox. These patients are without medical attendance or supervision of any kind; in fact there is no one to help the patients in any way or to do anything for them. They are expected to prepare their own food, and they eat anything they can get and at any time they wish. The supply of food is poor and the facilities for cooking it are of the most meagre description. In addition to cooking the food and washing the dishes, patients are supposed, apparently, to wash their own bed linen and even blankets, as neither clean sheets nor blankets are available. In some cases, patients, on entering the hospital, have been obliged to make use of blankets, previously used by some one else, which have been neither washed nor disinfected. The sanitary arrangements are of the most primitive kind, there being neither sewer nor water supply. No means of heating the house is provided, a homesteader's tin stove, placed in the kitchen, being the only way of heating the fourteen rooms of the building. The room which has been occupied by a patient is not disinfected, and the patient is told by the doctor to disinfect his clothes before leaving; whether this is done or not is left to the patient's own discretion. Of course we do not vouch for the truth of this, but the reliability of its source warrants its publication.

In a later issue of the Calgary *Herald* we are pleased to note that the above conditions are not to continue. A joint committee of the city commissioners and hospital board has been deputed to wait on the Minister of the Interior with the object of obtaining a certain site for an isolation hospital to replace the building now employed for that purpose. We earnestly hope that their mission may be a successful one and that Calgary will show itself able and willing to guard the health of its citizens in a manner befitting a modern and progressive city of the West.

ONTARIO HEALTH ACT

THE Ontario Public Health Act formally came into effect April 16th, 1912, but the various changes embodied therein will not be acted upon immediately. A certain amount of time will be required to make the necessary arrangements before the different sections of the Act can be enforced. The division of the province into ten districts will take place, probably, some time before the end of the present year. The section dealing with the membership of the local boards of health will become operative when the yearly terms of the present members expire; but it will take some little time to complete the arrangements necessary to provide the sick poor with municipal care, and it is not probable that the regulations dealing with this subject will be enforced before the beginning of 1913.

In order to acquaint the local officers and the municipalities of the province with the provisions of the Act, notices explaining the various clauses are to be issued by the provincial health department. The clause dealing with communicable diseases, when enforced, will enable the health authorities to obtain an exact estimate of the amount of tuberculosis in the province,—it has been found impossible, in the past, to get exact information concerning the extent of the disease.

Important regulations in connexion with other clauses of the Act are now being drawn up for the guidance of local officers. The transportation and interment of corpses, the conduct of funerals, the prevention of typhoid and other epidemics, the sanitary conditions in mining, lumber and construction camps, and the overcrowding in premises, are among the many questions under consideration. The task of drawing up such regulations will necessarily demand time, but the importance of such measures, if rigidly enforced, cannot be overestimated.

We note from the *Canadian Practitioner and Review*, in the May issue, that the Seventeenth International Congress of Medicine will meet in London from August 6th to August 12th, 1913, under the presidency of Sir Thomas Barlow. The treasurers are Sir Dyce Duckworth and Mr. G. H. Makins, the secretary is Dr. Herringham.

Book Reviews

HEALTH AND MEDICAL INSPECTION OF SCHOOL CHILDREN. By WALTER S. CORNELL, M.D. Illustrated with two hundred half-tone and line engraving. 614 pages. F. A. Davis Co., Philadelphia. Price $3.00.

Dr. Cornell is director of the medical inspection of public schools in Philadelphia; and he has presented a practical exposition of the work of medical inspection of thirty-five thousand children. He does not attempt to give a review of the work in various localities, as that has already been done by Gulick and Ayers of the Russell Sage Foundation, and by the United States government. The book is illustrated with many photographs, and those of the various groups of school children are excessively interesting. The term Rooseveltian, as applied to a special type of teeth, appears to have found its way into literature. The amount of information in the book is almost incredible, and suggests the extraordinary activity that is going on in the United States in the public schools.

ANÆSTHESIA AND ANALGESIA. By J. D. MORTIMER, M.B., F.R.C.S., Anæsthetist, Royal Waterloo Hospital. 276 pages, 29 illustrations. Price $2.00. London: University of London Press. Toronto: D. T. McAinsh & Co.

This book forms one of the London Practitioners' Manuals, and deals for the most part with the practical aspects of anæsthetics. It bears on every page the mark of the author's experience. From the same series we have been favoured with a copy of "Minor Surgery," by L. A. Bidwell, F.R.C.S., which is entirely adequate for the purpose for which it is intended.

THE PRESCRIBER. Edited by THOMAS STEPHENSON, F.R.S.E., F.C.S., Examiner of the Pharmaceutical Society of Great Britain. Vol. V, 1911. Edinburgh: The *Prescriber* Offices.

This book is really a bound volume of the *Prescriber*, which, in turn, is a monthly journal published in Edinburgh dealing with therapeutics, pharmacology, and the newer remedies. Accordingly the volume gives a complete summary of the year's progress in therapeutics and treatment. The index to current literature is extremely minute and covers every important publication of the year. This book must prove of great value to those who still think that medicine has something to do with treatment. Throughout the book there are many pleasant little jottings of fine literary quality. It is both useful and interesting, and is an example of what good editing should be.

A DICTIONARY OF TREATMENT INCLUDING MEDICAL AND SURGICAL THERAPEUTICS. By SIR WILLIAM WHITLA, M.A., M.D., LL.D. Fifth edition. 1204 pages. Price 16s. net. London: Baillière, Tindall & Cox, 1912.

A book by Sir William Whitla, which has been known to students for over twenty years, which has now reached its fifth edition and has been selected for translation into the Chinese language, requires no words of commendation from us. Professor Whitla, it will be remembered, was at first more especially concerned with pharmacy and materia medica, but he added to one of his books a therapeutic index for reference. What was at first undertaken with the intention of being compressed into fifty or sixty pages, has now grown into a volume of more than one thousand two hundred. The book is dedicated to British medical missionaries and one can readily understand the comfort which this book would bring to physicians obliged to rely entirely upon themselves.

CYCLOPEDIA OF AMERICAN MEDICAL BIOGRAPHY. By HOWARD A. KELLY, M.D., Professor of Gynæcologic Surgery at Johns Hopkins University, Baltimore. Two octavo volumes averaging 525 pages each, with portraits. Philadelphia and London: W. B. Saunders Company, 1912. Per set: cloth, $10.00 net; half morocco, $13.00 net. Canadian agents, The J. F. Hartz Co., Limited, Toronto.

For many years Dr. Kelly has been at work upon this Cyclopedia of American Medical Biography, and it must afford him great satisfaction to have brought the task to so satisfactory a conclusion. The period covered is from the years 1610 to 1910. The task which Dr. Kelly set before himself was to give a brief outline of the life of every important personage who was a member of the medical profession in the United States and Canada; and he has had, as he acknowledges very handsomely, the editorial assistance of Miss Waterson. The two countries were arranged in sections and the biographies of the deceased physicians in those areas were assigned to different persons. As a result, the life-story of more than twelve hundred physicians is brought together in these volumes. By way of introduction, there are several articles, covering nearly one hundred pages, in which is given an account of the rise and development in the United States of the various branches of medicine. C. R. Barden writes upon anatomy; A. Allemann upon surgery; Howard A. Kelly upon gynæcology and obstetrics; Harry Friedenwald upon laryngology; A. B. Withington upon women in medicine in America, and T. H. Schastid upon medical jurisprudence. All of these articles are of very great interest to any one who is anxious to follow the history of medicine in America. Canadian biography has not been neglected, for we notice accounts of Sir William Hingston, James Stewart, Frank Buller, R. P. Howard, Wyatt Johnston. These two imposing volumes are likely to remain for a long time the standard of medical biography in America, and we hasten to congratulate Dr. Kelly and the many who have collaborated in this monumental work.

INTERNATIONAL CLINICS. Edited by HENRY W. CATTELL, A.M., M.D., Philadelphia, and others. Vol. I. Twenty-second series. J. B. Lippincott Company, Philadelphia, 1912. Chas Roberts, Montreal.

The present volume strikes the present reviewer as being the most interesting of the series which has come to his attention during the past ten years. It contains something about everything, and all of it good. One article, namely, that upon venereal disease in the United States Navy, by Surgeon J. S. Taylor, is one of the most important contributions to this subject which has yet been published. It is of great historical and medical value. Where there is so much that is good it would be invidious to particularize, and we commend most warmly this series to those who are yet unacquainted with it. To the many who are accustomed to receive these books the volumes require no commendation.

A POCKET FORMULARY. By E. QUIN THORNTON, M.D. Tenth edition, revised. Price $1.50. Philadelphia: Lea & Febiger, 1912.

One needs but mention that this is the tenth edition of a book already well and favourably known to those who employ medicine in the treatment of disease. All of the prescriptions have been tested by experience and will be of great value especially to the younger practitioner.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

INTERNATIONAL CLINICS. Edited by HENRY W. CATTELL, A.M., M.D., Philadelphia, and others. Vol. I, 22nd Series. J. B. Lippincott Company, Philadelphia, 1912.

DISEASES OF THE EAR. By WILLIAM MILLIGAN, M.D., Aurist and Laryngologist to the Royal Infirmary, Manchester, and WYATT WINGRAVE, M.D., Pathologist to the Central Throat and Ear Hospital, London. Illustrated with 293 engravings and six coloured plates. The Macmillan Company of Canada, Ltd., Toronto, 1911.

THE TREATMENT OF SHORTSIGHT. By PROFESSOR DR. J. HIRSCHBERG, Geh. Med. Rat. in Berlin. Translated by G. LINDSAY JOHNSON, M.D., F.R.C.S. With 12 illustrations. Rebman Company, New York, 1912.

A CYCLOPÆDIA OF AMERICAN MEDICAL BIOGRAPHY. Vols. I and II. By HOWARD A. KELLY, M.D. Illustrated with portraits. W. B. Saunders Company, Philadelphia, 1912.

SOME RECENTLY DISCOVERED LETTERS OF WILLIAM HARVEY, WITH OTHER MISCELLANEA. By S. WEIR MITCHELL, M.D., LL.D, F.R.S. With a bibliography of Harvey's works by C. P. FISHER. Transactions of the College of Physicians, Philadelphia, 1912.

CLINICAL DISORDERS OF THE HEART BEAT. By THOMAS LEWIS, M.D., D.Sc., M.R.C.P. Shaw & Sons, London, 1912.

THE CAUSE OF CANCER, being Part III of "Protozoa and Disease." By J. JACKSON CLARKE, M.B., F.R.C.S. Illustrated with eight plates. Cloth 7s. 6d. net. Ballière, Tindall & Cox, London, 1912.

Men and Books

By Sir William Osler

XI. George Bodington. A generation—two indeed—in advance of his day, George Bodington has at last come to his own, and is everywhere recognized as the pioneer of the open-air treatment of pulmonary tuberculosis. Not that he was the first to send consumptives into the open: Celsus speaks of sea voyages and the advantages of the climate of Egypt, and the horseback cure of Sydenham meant fresh air and exercise. But Bodington recognized that "to live in and breathe freely open air, without being deterred by the wind or weather, is one important and essential remedy in arresting tuberculosis."

I have long been looking for his rare "Essay on the treatment and cure of pulmonary consumption on principles natural, rational and successful," London, 1840. A few weeks ago at Winchester, I met in consultation Dr. Arthur E. Bodington, and immediately asked what relation he was to the well-known physician of the same name. He replied, "His grandson." Then I said, "Well, perhaps you are the man who can give me a copy of his essay," and to my delight he said he had one to spare; and he not only gave me the original but also the very interesting reprint, which he issued in 1906, with a portrait and a sketch of the author.

A country practitioner, at first at Erdington, Bodington subsequently removed to Sutton Coldfield, where he had a private asylum, and where he lived until his death in 1882, in his eighty-third year. The period at which he wrote was not a very comfortable one for the poor consumptive. The prevalent method of treatment was to shut the patient up in a close room, excluding as far as possible the access of air, and to drug him with tartarized antimony and digitalis, alternating with occasional doses of calomel, and now and then to take a little blood! For all this Bodington substituted "fresh morning air, a good dinner to make him fat, an opium pill to make him sleep, and good wine to bring down his pulse." He had really the idea of sanatorium treatment. "I have taken for the purpose a house in every respect adapted and near to my own residence for the reception of patients of this class, who may be desirous, or who are recommended to remove from their homes for the benefit of a change of air." He held that cold was never too severe for the consumptive patient: "The cooler the air which passes into the lungs the greater will be the benefit the patient will receive. Sharp, frosty days in the winter season are the most favourable. The application of cold, pure air to the interior surface of the lungs is the most powerful sedative that can be applied." He advocated riding or walking, according to the strength of the patient. Several cases are reported in the essay showing the very favourable results obtained by this treatment. As is often the case, his practice was better than his theory, for he had a belief that the disease was associated with impairment of the contractility of the lungs from loss of nervous power, consequent upon the presence of the tuberculous matter.

The house at Sutton Coldfield still stands, the prototype of the innumerable open-air sanatoria of to-day. A few years ago Dr. Lawrason Brown, of Saranac, made a pious pilgrimage to the place, and I am indebted to him for photographs of the house.

Bodington was severely criticized by his contemporaries, and he did not live to see the open-air method adopted, but has the great merit of being the first, or at any rate among the very first, to advocate rational and scientific treatment of pulmonary consumption.

XII. Histoire de la Charite. The second part of Volume IV, of Lallemand's great work, Picard & Fils, Paris, is just to hand, covering the period from the sixteenth to the nineteenth century. There is nothing in literature of the same extent, as the work not only deals with the evolution of the hospital, but with all the accessory means of caring for the afflicted in mind and body. In progress for the past ten years, Volume I has dealt with the ancient civilizations; Volume II with the first nine centuries of the Christian era; Volume III with Europe in the Middle Ages, and Volume IV, both first and second parts, with the modern period to the nineteenth century. Though no book in English has quite the same scope, the "History of nursing," by Miss Nutting and Miss Dock, gives much information not available elsewhere, and brings to date the story of training schools for nurses.

In the present volume, M. Lallemand deals with the story of the insane, dements, imbeciles, and epileptics. The famous Bedlam, in London, according to Burdett, was the first asylum for the insane established in Europe. This is a sad story, until one comes to the days of Pinel and of William Tuke. At the Bicêtre, in 1791, Pinel for the first time struck the chains off lunatics, from some indeed who had been in irons for ten, twenty, and even thirty years! Two years later he did the same at the Salpêtrière. From his prominent position as a teacher and the ability of his writings he did more than any other man to introduce a humane treatment of the insane.

The organization in the sixteenth, seventeenth, and eighteenth centuries of the care of the blind, the deaf and dumb, and of foundlings, is considered in separate chapters.

A large part of the work is taken up with the consideration of the measures adopted for the care of the poor in various countries in Europe. The final chapters treat of the accessory means for helping the needy, such as the official pawn-shops, "Monts de piétés." Apparently these were first organized at Rome in 1515, and spread throughout Italy and the Low Countries before they were established in Paris in 1611.

The extent and importance of the work may be judged from these brief memoranda. In Volume V, the author will consider the history of charity in America, in the ancient civilizations of India and among the Mahometans, and the question of slavery among the blacks.

Res Judicatæ

THE TREATMENT OF FRACTURES

THERE has been during the past few years an increasing dissatisfaction with the results obtained by the accepted methods in the treatment of fractures. This dissatisfaction has been expressed time and again by surgeons in all countries, and is responsible for the greatly increased interest shown in the discussion of fractures in the more recent medical congresses, and for the eagerness that surgeons have shown in operative interference, more especially since the prominence given to the method by Mr. Lane, and the introduction of his plates.

In an article published by Mr. Clinton Dent, on the end results of fractures among the members of the London police, he states that, after fracture of both bones of the leg, 30 per cent. at least never regain the standard of efficiency required; very few regain it under six months; and "fractures of the leg involving the knee or ankle joints uniformly lead to permanent unfitness for the work that devolves on these men."

Mr. Lane has attacked the problem on the theory that the first essentials of treatment are the accurate replacing of the fragments, and their immobilization. To fulfil these conditions he has developed the technique of open operation and plating.

Professor Lucas-Championnière has for many years maintained the position that immoblization is theoretically wrong; and that an absolute reposition of the fragments is unnecessary for a perfect functional result. This standpoint has been recently brought to notice in a book, by James B. Mennell, based on his experience of some four hundred fractures treated by him in the out-patient department of St. Thomas's Hospital, London. The book, from which I shall largely quote, is accompanied by an introduction written by "The Professor," as the author reverently calls him, stating that it is a faithful exposition of his theory and practice. The essentials of the method, as outlined by him here and in published articles, are in part:

The absolute immobilization of bony fragments is not the most favourable condition for their repair. Mobilization and massage, acting on the pain and the muscular spasm, play in the repair a rôle which nothing else can replace.

Many deformities disappear spontaneously after the relief of spasm of muscles by means of massage and mobilization.

The perfect return of function is not in direct correspondence to the reëstablishment of the exact form, or even the exact length, of the limb, but more to the rapid restoration of the movements, which favours the life of the neighbouring joints, muscles, nerves, and vessels.

The prevention of movement, even for short periods, especially after injury, produces changes from which recovery may never be perfect.

On the application of his theory, the mobilization must always be regulated, and the dosage progressive.

Treatment should be begun as soon as possible, and should never cause pain. During the course of mobilization it is not the amplitude, but the number, of the movements which must be sought. The treatment must vary according to the individual and the accident.

The definition of the terms massage and mobilisation, as understood by Lucas-Championnière, is very different from that usually practised by the professional masseur. He has been forced to suggest the rather clumsy term, "glucokinesis" to express his meaning.

The massage practised is essentially a light stroking of the skin carried on with precise regularity and smoothness, and without the slightest deviation in direction. It should, generally speaking, be from a distal to a proximal point and correspond to the lines of the muscles and veins. Pain should never be caused; relief from pain should, or as it is stated will, always follow.

In the same way, mobilization is far from the active process generally understood, and is governed by the same restriction—it must cause no pain. The amplitude of the movement is at first small, and confined to the joints far removed from the site of the fracture. It should cause no return of the muscular spasm. Splints are used as occasion requires, and are retained for as long as is thought fit, but must be of such a nature as may be easily removed for daily treatment, and are to be discarded as early as possible.

That massage and movement will be of benefit to the skin, muscles, and joints of the limb affected no one will deny; nor that it would be desirable that the limb should be ready for use as soon as the bone is strong enough to bear the strain required of it. Lucas-

Championnière and his school go farther than this, stating that some movement is necessary for a good and rapid union; that under the methods presuming fixation, this fixation, even by the Lane plates, is never absolute, and that experience with the method shows that there is no tendency to delayed union. Rather is there danger of over callus formation if too great zeal is shown during the mobilization.

The immediate results of the treatment are said to be: first, the relief of pain; second, the relief of spasm. It is claimed that just as the pain associated with fracture is due to the spasm of the muscles, the opposition to replacement is due to the same cause, and that when the pain and spasm have been overcome by massage, to quote from Mennell, "The ease with which the fragments can be manipulated is a revelation to those having no experience with the method." He further states that in may cases the spasm does not return, and consequently the tendency to recurrence of the deformity is not present, and the objection to the removal of the splints is invalid.

The normal, or nearly normal, condition of the skin, muscles, and neighbouring joints is maintained. The tedious process of the gradual restoration of a stiffened joint we all know, and the advantage of movements within the joints adjacent to a fracture calls for little discussion.

It is unfair to give the impression that no systematic attempt is made at reduction, either under the "anæsthesia of massage," or under a general anæsthetic, for while Lucas-Championnière holds that slight deformity or even shortening of the limb does not prevent a restoration to perfect function, he clearly states that all deviation of axis should be corrected, and is quite prepared to resort to all or any means for doing this, even an open operation if necessary.

The passive movements are to be commenced after a period of massage and must be carried out while the muscles are relaxed. Without this relaxation the movements take on the character of a forced movement, a condition which must be avoided.

Equally with the massage, the passive movements must be painless. Amplitude of movement is not sought for. All possible movements at a joint must be carried out, and no joint of the injured limb neglected. No movement which will tend to reproduce the deformity is to be attempted till the union of the bones is sufficiently strong to prevent displacement. The greatest care must be taken to avoid movements of the fragments. "Such slight movements as are unavoidable will be of benefit and sufficient to ensure a good callus."

Taking as an example the treatment outlined in Mennell's book for a fracture of the shaft of the humerus, the statement is made, "if the deformity does not reduce as the result of massage, there is a mechanical obstruction present which can be overcome only by operation." The treatment begins by a gentle stroking of the muscles of the upper arm for about five minutes, then those of the forearm. During some of this treatment the muscles relax, crepitus is felt, and the deformity either disappears or lessens. The anæsthesia in this region is stated to be so profound that dangerous movements may be carried out painlessly. Callus formation is very rapid and care must be taken to guard the fragments against unnecessary movements, which always tend to encourage excessive formation. Union occurs at the end of ten to twelve days, and until it has taken place the patient usually prefers to wear a splint. By the end of a month any ordinary occupation may be resumed, but for heavy labour another fortnight's treatment by exercises is advisable.

Such is a rough summary of the Lucas-Championnière method of treating fractures, and I may be pardoned for giving it in some detail since both he and his disciple complain repeatedly, and with justice, that they are condemned unheard, and that ill results are credited to the method, where the essentials of that treatment have either not been known or neglected.

We can heartily agree with all or most of what is said regarding the evil effects of immobilization on the surrounding soft tissues, whether skin, muscles, nerve, or blood vessel, and on the neighbouring joints. It remains to be seen if the position is well taken that this immobilization is unnecessary, either on account of the danger of failure of union, or union in a faulty position. On this statement the treatment of many cases by the Lucas-Championnière method will stand or fall.

His position is based on theoretical grounds, that the fractures which heal with the greatest certainty are those where the blood supply is richest, that the œdema of the limb, and more especially the application of immobilizing splints interfere with the blood supply to the part, while massage, slight movement, and freedom from restraining pressure tend to restore a normal and healthy state. On the other hand he questions, and justly so, in how far the immobilizing splints are really effective to prevent all movement, and points out the frequency with which deformity recurs even under the most carefully applied splints. The bones where immobility is notoriously impossible are the clavicle and ribs. These unite almost invariably, while it is a generally growing belief in these cases treated by the open method and fixed with at least approximate security in an accurately corrected position, the union is not infrequently slower and weaker than when the bones are less accurately adjusted and perhaps less securely immobilized. One of the strongest points is, however, that in none of Mennell's four hundred cases was there any failure to unite, although among them were some fifty of the lower third of the humerus.

There are many fractures that are now being generally treated in a manner somewhat resembling that advocated. Fractures which on reposition show no tendency to displacement, are being more and more treated by early massage with passive movements, and with good results. Experience alone can convince us that the startling statements as to the effect of massage and the splendid results of the treatment can be duplicated elsewhere. It is perhaps significant to note as a check to our enthusiasm that in no part of Mennell's work is there mention of any less satisfying result than complete restoration of function. Such an achievement, while most devoutly to be wished, is scarcely to be looked for. The results described are so superior to those ordinarily seen and the method includes so many desirable elements that it should be discarded only after having been given a fair trial following his directions accurately.

The distinctive elements seem to be, not so much the early treatment of fracture by massage and movements, but the character of the massage, the dosage of the movements, and the effects claimed on the muscular spasm. He recognises to the full that the injury to the soft parts surrounding a fracture are of equal or greater importance for the restoration of function than the break in the bone itself. He perhaps undervalues the advantages of an accurate, or fairly accurate, reduction of the deformity. The massage employed can have little or no mechanical effect, and must depend, to produce the results claimed, on some nerve action. The deformity, the resistance to reposition of the fragments in general, we all recognize, is largely due, to the muscular spasm. If, as he claims, a few minutes of massage will wholly abolish that spasm and render the part anæsthetic so that gentle movements of manipulation can be carried out painlessly or the fragments slip into place of themselves; and if this spasm does not recur to displace the fragments afterwards, it seems asking little of our enthusiasm to spend the necessary time and patience in giving it a fair trial.

The admonition is repeated over and over again in respect to the massage, the active and the passive movements, "It" must cause no pain. This is a consideration of no small importance in dealing with a new method. Further, it in no way precludes the use of all our present means of securing a good position, but rather uses them as occasion offers. The only two points at which issue may be reasonably taken are, the fear that the early movements may interfere with firm union and the danger of recurrence of deformity due to insufficient fixation. The first objection he meets with the statement that a certain amount of movement is essential to good and rapid callus formation and that the danger of excessive production is more to be feared. As to the second, he states that with care it does not take place. Granted these two points, and if we can prove that in our hands the massage and mobilization will have the effects described, the method can hardly fail to revolutionize our treatment of the ordinary type of fractures.

MONTREAL. F. A. C. SCRIMGER.

CANADIAN HEALTH DEPARTMENT

THE Canadian Government expended $377,485 for public health service in 1910. Of this sum the Department of Agriculture spent $146,781; the Department of Indian Affairs $125,121; the Department of the Interior $66,969, and the Department of Inland Revenue $38,613. It has been suggested that the public health service be placed under one department. This would undoubtedly make for economy and greater efficiency.

Retrospect of Surgery

Die operative Beeinflussung einseitiger Lungenphthise durch totale Brustwandmobilisirung und Lungenentspannung (Pleuro-Pneumolysis totalis). Von Prof. Dr. P. L. Friedrich, *Archiv fur klinische Chirurgie*, Band lxxxvii, 1908.

The Operative Treatment of Tuberculosis of the Lungs. By Prof. Dr. P. L. Friedrich, *Annals of Surgery*, Vol. l., July, 1909.

Friedrich. Statistisches und Prinzipielles zur Frage der Rippenresektion ausgedehnten oder beschrankten Umfanges bei kavernoser Lungenphthise und bei Hamoptoe. *Munchener medizinische Wochenschrift*, Sept. 26th and October 3rd, 1911.

THE articles of Friedrich, of which the titles appear in the superscription, represent a somewhat new procedure in the surgical treatment of chronic pulmonary tuberculosis. The procedure which he advises and has carried out in numerous cases consists in the total removal of the ribs from the second to the tenth, inclusive, and from the angle behind to near the costal cartilage in front. It was in the extent of rib removal that his work differed from that of others, such as Quincke, Spengler, Turban, Landerer, and Garrè. These had recommended a rather limited resection of ribs, chiefly over cavities.

The beginnings of Friedrich's work in removing the ribs overlying the lung severely affected by tuberculosis were prompted by the coincidence of his having been engaged for several years upon experimental studies concerning the compensation of space in the thoracic cavity after the removal of the entire lung, while his colleague on the medical side at Marburg, in his detailed studies of the treatment of tuberculosis with artificial pneumothorax, had felt the need of more radical surgical measures. Friedrich had found that in animals the cavity caused by the removal of one lung was, in the lapse of time, perfectly compensated. "In addition to this," he goes on to say, "I was enabled to observe in my former clinic in Greifswald, in a patient with extensive tuberculosis of the lungs and ribs, a favourable influence upon the pulmonary tuberculosis which astonished myself and my assistants after ablation of almost the entire bony wall of the thorax on the diseased side. Thereupon, when my colleague in internal medicine referred to me cases in which pneumothorax therapy proved a failure, on account of mutual adhesions of the pleural layers, we determined, after reviewing the various possibilities of surgical intervention, to assist the tendency of a still youthful lung towards shrinkage with tuberculous, cavernous, destructive processes in such a way that I de-ossified, as it were, the thoracic wall by ablating the ribs from the second to the tenth, from the spinal column as far as the costal cartilage at the sternum, the lung thus being made to collapse towards the hilus." The root idea in all this was to utilize atmospheric pressure in setting the diseased lung at rest, just as is the case with artificial pneumothorax.

The advantages of the operation he sums up under four headings: (1) collapse of cavernous lung tissue; (2) extensive exclusion of the lung on the operated side from the respiratory function; (3) retardation of the pulmonary circulation in this lung; (4) through the arrest of breathing in this lung, an essential diminution of the lymphatic circulation and absorption.

The results of the operation he summarizes briefly as follows:

1. There occurs a prompt compensatory increase in the volume of the other lung.

2. There was never a hastening of the general course of the disease through aggravation of early lesions in the other lung; nor any death from acute miliary tuberculosis. On the contrary, these, as a rule, are favourably influenced. This, however, only on condition of selecting for the operation only such cases of unilateral phthisis in which the other side is not simultaneously affected with active, progressive foci, passive processes alone being present. In particular, cases with recent lesions in other parts of the body, such as the larynx and the bowel, must be excluded.

3. In a few months bone regeneration from the rib periosteum is of value in preventing the bulging out of a still inflatable portion of lung during coughing.

Immediately after the operation there is apt to be a serious effect on the heart, due to inward pressure of tissue over the lung. This is a direct, mechanical effect. The heart becomes very rapid, and in the fatal cases there develops a condition of "delirium cordis," in which, apparently, the patient dies of heart failure. Concerning this he says further: "The direct, mechanical effect upon the heart, through the collapse of the diseased lung, may constitute a serious feature of the operation, as I have shown in former publications. It does not manifest itself, however, in the presence of conditions such as those pointed out above, when the lung which is to be constricted is already very rich in connective tissue, and when the formation of pleural and mediastinal adhesions guarantees a certain stability of the topical relations in the interior of the thorax. I have, furthermore, succeeded in guarding against the danger of acute dislocation of the heart by a simple device, namely, raising the arm of the affected side above the horizontal plane and still keeping the lung of the operated side somewhat in the balance, as it were, through the traction of the scapula and muscles, so that the effect upon the heart is allowed to manifest itself only gradually.

"The immediate results in the course of the disease are usually particularly impressive; defervescence follows rapidly, as a rule, in patients with a high fever. The subsidence of the fever must be a result of the changed conditions of absorption, and accordingly permits a conclusion as to the favourable influence upon the latter, that becoming an objective graduator for the immediate effect of the operation.

"In every case the amount of sputum is reduced enormously—from 200 to 10 c.c. and less—within some days, at most weeks, after the operation, and the irritative cough diminished. This would seem to justify the conclusion that it is the collapse of the cavities after the relaxation of the lung tissue and the cleansing of the cavity wall, which induces this result. This is the most impressive feature for the patient to begin with. Our past experience further shows, however, that not only the cavernous tissue is favourably influenced by putting the lung at rest, but so also to a considerable extent is the as yet non-disintegrated, infiltrated portion. In all our cases an increase of the body weight and improved subjective condition are noted in the further course."

In this most recent contribution in the *Munchener Medizinische Wochenschrift,* Friedrich resumes his experience up to date and gives the following details as a summary: "The deciding factor that justifies our procedure is seen in the following. Out of twenty-seven cases, eight died during the first three weeks after the operation. One died after nine months, and he was operated on during my absence by my assistant, Sauerbruch, with a limited rib resection; while he who died a year after operation had developed brain tuberculosis. Against these figures may be reckoned the fact that we had to deal with exceptionally severe cases, which, according to the opinion of experienced lung specialists, were growing worse from month to month; and yet, in fourteen of these desperately ill patients, we are able to report very favourable results. Up to the time of their operation they were considered by their physicians as hopeless cases, but to-day, four years after the operation, they are not only alive but are greatly improved, according to the opinion of their former and present physicians. If we take into consideration the operative mortality in incurable lesions in other parts of the body, such as brain tumour and cancer of the stomach, we may say that the unavoidable death rate of 26 per cent. in our patients is, considering the difficulties of the cases, not discouraging, but should rather be encouraging; and especially so, if we are careful in the future to reject such cases which our first experience leads us to consider unsuitable."

Perhaps the most important thing in the whole matter is the correct selection of cases. Upon this point Friedrich and Brauer are fairly definite. They say, putting it briefly, that no case should be operated upon under fifteen years or over forty years of age. After the latter period one cannot rely upon the necessary powers of resistance of the patients, particularly as they are always in rather poor condition. Extremely anæmic patients should also be excluded. In general, it may be said that the more the clinical picture tends towards the condition of cavity formation and fibroid contraction as opposed to the condition of slight shrinkage and fresh infiltrating processes, the more the operation promises success. There is no need of excluding such cases as show slight lesions on the sound side, provided these are not active. Long continued fever and numerous bacilli in the sputum form by no means a contra-indication. Some of those who have been most favourably influenced are cases of this character. Active process elsewhere in the body forms a strict contra-indication. Of the eight cases which died shortly after operation, no less than six belonged to this category.

In what follows Friedrich discusses various modifications of the operation which he has developed during the last few years, such as operating in two stages, and the use in certain cases of a single, vertical incision in the axilla. He gives in great detail the histories of certain of the cases, from which it would appear that the operation had in reality accomplished a very marked improvement. Patients who had been given up as hopeless by competent specialists in tuberculosis were enabled, not to resume, it is true, active life and their ordinary avocations, but to spend a very comfortable existence as semi-invalids, having no fever and very little sputum, feeling quite well and fairly strong, and having gained moderately in weight. Several of these had been operated on four years previously and, so far as one can judge, would have been, without the operation, long in their graves.

Taking it all in all, it would seem as if the very natural scepticism with which the ideas of Friedrich had first inspired one, must give place to careful consideration and to a not unreasonable hope that many of the very bad cases of chronic pulmonary tuberculosis may be so greatly benefited by this operation as to justify its being undertaken if the patient is willing to accept the immediate risk.

TRACHOMA BODIES. Any investigation, even of a negative character, which serves to throw light on the cause of the infectious character of so troublesome a disease as trachoma is to be welcomed. The bacteriology of trachoma is at present a series of negations, and this is especially unfortunate as the disease has such ill defined clinical boundaries that the discovery of the specific cause would alone render possible any real advance in its study. Secondary infections are so frequent in this disease that not unnaturally numerous organisms have been credited with its causation, whose claims in this respect have subsequently been shown to rest on no substantial basis. One of these, the trachoma body described by Halberstaedter and Prowazek, has claims which are difficult to disprove. These bodies were regarded by their discoverers as being true parasites belonging to a new group of intracellular organisms —the chlamydozoa. Their non-specific character has, however, been shown by finding them in cases other than trachoma, and even in very slightly inflamed or normal conjunctivæ. A recent paper by Dr. S. B. Wolbach and Dr. S. Hanford McKee carries the matter further by furnishing a probable explanation of the true nature of those trachoma bodies, which, as the authors show, occur only in these portions of the conjunctival epithelium which are the most injured, and where typical mucus-secreting cells are absent. A careful study of the bodies by smear preparations and in sections, together with comparative studies of other mucus-secreting surfaces, have lead these investigators to the conclusion that the trachoma bodies represent mucus secretion under pathological conditions, and consequently that their parasitic nature is disproved.—*The Lancet*, February 10th, 1912, p. 381.

Obituary

The death occurred on April 18th, of Mr. Maxime Mireault, chief inspector of the Royal Edward Institute, Montreal. Mr. Mireault for many years was associated with the anti-tuberculosis movement in Montreal; he was most devoted and untiring in his zeal and, in the course of his work, practically every case of consumption arising in the city was visited by him. Thus his knowledge of the conditions existing in the homes of those afflicted with the disease was extensive and practical and his influence great. Mr. Mireault contracted the disease against which he was working and at last was compelled to abandon his labours. His decline was rapid and his death occurred four weeks later, in the forty-second year of his age. Mr. Mireault was a graduate of St. Mary's College and of Laval University, Montreal. He is survived by his wife and three young children.

The body of Dr. Poitras, of Montreal, was found April 18th, near the town of Maple Creek. It is believed that Dr. Poitras fell from the C.P.R. train when on his way to Vancouver last December, and that he died as a result of injuries sustained.

Dr. Ulric Lafontaine died April 6th. Dr. Lafontaine was the son of Dr. Gustave Lafontaine of Manchester, N.H., and was twenty-six years of age.

Dr. J. W. Clemesha died April 20th, at the Toronto General Hospital, as a result of blood poisoning. Dr. Clemesha was one of the leading practitioners of Port Hope, and a highly respected citizen. At the time of his death, he was president of the Midland Loan and Savings Company, president of the Port Hope Gas Company, and a member of the High School Board. Dr. Clemesha is survived by a widow, two sons, and a daughter.

Dr. Tracy died at Belleville, April 21st, 1912, after a long illness. Dr. Tracy was seventy-six years of age and was well-known in Belleville, where he had practised for forty years. Dr. Tracy was born in Wales, and was a graduate of the Royal Medical College at Kingston. During his long medical career, Dr. Tracy filled many positions, being medical health officer for the city of Belleville and chairman of the board of education; he was one of the original founders of the Belleville hospital and served on the board of that institution for several years. Dr. Tracy was also Grand Trunk surgeon and surgeon lieutenant-colonel of the forty-ninth regiment, H.R., in which capacity he saw service in the north-west rebellion in 1885.

Dr. Robert M. Butterfield, of Guelph, died from typhoid fever in London, England, where he was doing post-graduate work. Dr. Butterfield was a medallist of the University of Toronto.

Dr. J. W. Smith, of Dundas, died May 2nd, 1912, in the sixty-fifth year of his age.

Dr. D. W. Carroll died suddenly from heart failure, April 25th, 1912. Dr. Carroll was about seventy-five years of age and was one of the oldest native residents of Ingersoll; he had been in the medical profession for nearly fifty years and continued his work up to the time of his death.

Dr. T. N. McLean died at Chicago, March 21st. Dr. McLean graduated from McGill University in 1882.

News

At a meeting of the Halifax Board of Health, held April 26th, 1912, it was decided that patients from the marine and military departments should not be admitted to the infectious diseases hospital. It was stated that the hospital was overcrowded with patients suffering from scarlet-fever and it was considered that, in view of the limited accommodation provided by the hospital, patients from the army and navy should make use of their own hospitals, and that the infectious diseases hospital should be reserved for the use of citizens.

The report of the Toronto medical health officer for the month of April shows that the health of the city has been good and the cases of contagious diseases relatively few.

Drs. W. W. Turnbull, O. C. Dorham, and George Stephens, have been appointed resident district physicians by the Winnipeg Board of Control. These physicians will assist the civic medical officers.

A new hospital for consumptives is to be erected at Brant; the sum of seventeen thousand dollars has already been subscribed towards the building fund.

The vital statistics for contagious diseases for the month of March, issued by the Ontario provincial board of health, show a large increase in the number of cases of small-pox; one hundred and two cases of this disease have occurred during March this year as compared with fifty-eight cases during the same month in 1911. With the exception of this disease, the statistics compare very favourably with those for 1911.

The Saskatoon health department has been accused of negligence in its inspection of slaughter-houses. The difficulty appears to be, not negligence on the part of the health officials, but laxity on the part of the law administrators. Dr. McKay, medical health officer, in a letter to the Saskatoon *Star* emphasizes the futility of existing laws which are never enforced. The City Act provides that the Council may make regulations for "inspecting and regulating slaughter-houses" and for "making and enforcing building and sanitary regulations for the said slaughter-houses." But unless the regulations are enforced by the law, it is impossible for the health authorities to control the situation and to prevent the sale of impure and diseased meat. Dr. McKay states that, on every occasion that the health authorities have attempted to enforce the regulations by recourse to law, they have been defeated, or a minimum fine has been imposed on the offender. Such conditions, Dr. McKay affirms, are not confined to Saskatoon, but unfortunately are reproduced in almost every city in the West. The only solution appears to him to be the establishment of municipal abattoirs and the consequent disappearance of the private slaughter-house.

At the regular meeting of the Victoria Hospital Board, which took place April 12th, it was decided that certificates of service should be refused to two young doctors who had served nearly six months as junior house surgeons. Both young men signed contracts to stay for six months, but, instead of doing so, left the hospital without giving any notice of their intention to do so to the superintendent. The board considered that no recognition of their services should be made and the matter is to be referred to the provincial board of medical examiners.

THE executive of the Anti-tuberculosis Society of Saskatchewan have decided to purchase a site at Fort Qu'Appelle and to erect a sanitarium, the total cost of which will be about $200,000.

A CASE of small-pox which developed on H.M.C.S. *Niobe*, is being treated at the Halifax Isolation Hospital.

SIX cases of diphtheria have occurred in Vancouver, one of which has proved fatal.

Two cases of small-pox have been reported in Montreal. At the lakeside town of Aylmer, Ontario, four cases of the disease have occurred.

THERE has been a serious epidemic of measles at Owen Sound and between three and four hundred cases of the disease have been reported. Most of the sufferers have been children, but several adults have contracted the disease. It is feared that a number of cases will result in total, or at least partial, deafness.

THE plans are being prepared for an addition to the Niagara Falls General Hospital. This is to take the form of a three-storied, separate, brick building, the cost of which is estimated at $30,000. The work is to be commenced in the fall and it is expected that the building will be completed by next spring. The new nurses' home in connexion with the hospital has just been opened.

DR. W. P. CAVEN, Dr. J. T. Fotheringham, Dr. H. B. Anderson, and Dr. Harold Parsons, have been appointed consultants to the Muskoka Free Hospital. These physicians will spend a day regularly once a month at the Muskoka Homes, with the exception of Dr. Parsons, whose visit will be made once every two months.

THE plans have been prepared for a new hospital at Alberni. This is to consist of a two-storied building with the main portion of the hospital in the wing and the administrative quarters in the centre. There will be ten beds in the men's ward and four beds and three private rooms in the women's section. It is hoped that the building will be finished this summer.

MEASLES is still very prevalent in Regina, and several fresh cases are reported every day. During the first two weeks of April, fifty-six cases of this disease were reported to the health authorities.

FIFTY-NINE cases of small-pox are reported from the village of Summertown, near Cornwall, the total population of which only numbers about one hundred. It has been found necessary to close two schools and one church in the village. Quarantine regulations are being strictly enforced under the directorship of Dr. R. W. Bell, inspector of the provincial board of health.

THE formal opening of the new hospital at Edmonton took place April 18th. The hospital has been established at a cost of about $130,000 and will accommodate one hundred and twenty patients. It is proposed to build another wing very shortly.

IT is expected that the Sisters of Providence new hospital, at Haileybury, will be ready for occupancy by the end of the summer.

THE new Winnipeg sanitarium which is being built at Elmwood, is nearing completion. It is claimed that the mineral waters, which have been discovered in its neighbourhood, are extremely beneficial in skin and nervous diseases.

A TOWN hospital is to be established at Souris, Manitoba.

IN honour of the memory of three members—Messrs. Mark Fotune, Hugo Ross, and Thomas Beattie,—who perished in the wreck of the *Titanic*, the Winnipeg Real Estate Exchange proposes to endow a public ward in the new Children's Hospital at Winnipeg.

THE hospital at Merritt, B.C., was formally opened by Mr. H. E. Young, on April 19th. It has been decided to erect a hospital at Elko, in the same province.

A HOSPITAL is to be erected for the Dr. Miller sanitarium, at Kentville, N.S., at a cost of $3,000. Several cottages are also to be built, and repairs and extensions made to the main building.

Mumps have been very prevalent among the school children of Calgary.

Four cases of small-pox occurred in Toronto.

The new wing of the Toronto Isolation Hospital, which was opened May 1st, has accommodation for one hundred and twenty-five beds. Great difficulty has been experienced during the past winter in dealing with cases of scarlet fever, owing to the inadequate accommodation provided. It has been quite impossible to remove many cases of the disease to the hospital; and the average waiting list has been twenty per month, sometimes even more than this.

The minister of the interior has commanded that the medical staff of inspectors connected with the Quebec agency of immigration be augmented. Accordingly eleven new inspectors have been appointed, while, we understand from the Quebec *Chronicle*, five of the old staff have resigned their positions.

An extended course of study for graduate students will be given by the Medical Faculty of McGill University during the coming summer. The course will begin on Monday, June 10th, and will be continued for a period of six weeks, during the first half of which the work will be conducted in the Royal Victoria, and during the second half in the Montreal General Hospital.

The course is open to graduates of medical schools in good standing. Candidates desirous of taking the course must first register with the registrar of the medical faculty. The fee, including registration, is one hundred dollars, payable in advance at the office of the bursar of the university.

Advanced work along special lines in any department may be arranged for through the registrar; a special fee will be charged for such courses. Receipts for fees paid must, in all cases, be shown to the superintendent on the occasion of the first demonstration in either hospital. Further information concerning the course will be furnished, if desired, by Dr. J. W. Scane, registrar of the medical faculty of McGill University.

The province of Quebec has been divided into ten sanitary districts. Competitive examinations for the purpose of selecting inspectors will begin on June 17th next. The examinations will be open only to physicians in possession of their diploma of public health, and will include written, oral, field, and laboratory tests; the administrative powers of the candidate will also be considered. Candidates must be able to speak both French and English. At least fifty per cent. of marks must be obtained for the written test, which may be taken either at Quebec or at Montreal, the subsequent tests will be given at the seat of the provincial board of health, 9 St. James Street, Montreal. The dates of the examinations are: June 17th, written examination, simultaneously at Quebec and Montreal. June 19th, (a) Inspections and written report. (b) Oral examination. June 20th, practice test in bacteriology and chemistry.

A COURSE of lectures on Applied Physiology was given during the months of April and May, in the Halifax Technical College, by Dr. David Fraser Harris, professor of physiology and histology in the Dalhousie University.

THE new isolation hospital at Guelph, was opened April 25th. The building is a very fine one; there are two entrances, one to the scarlet fever ward and one to the diphtheria ward; these two wards are situated in separate wings, completely isolated from each other, so that all danger of cross infection is eliminated. The hospital is admirably equipped with every modern contrivance and has accommodation for thirty-two patients. The special committee which was entrusted with the supervision of the erection and equipment of the hospital is to be congratulated on the result of its work.

DR. M. R. Bow has been appointed permanent city health officer for Regina at a salary of $2,500. Dr. Bow is a graduate of Queen's University and, for some time past, has been acting as assistant to Dr. Charlton, provincial bacteriologist and analyst.

IT is proposed to add an additional brick storey to the wing of the County Carleton General Hospital at Ottawa. The contemplated addition would provide fourteen extra beds in the public ward and several private rooms. It is estimated that the suggested improvements, if carried out, would cost about fifteen thousand dollars.

FIFTEEN cases of scarlet fever have occurred among the children cared for by the Ladies' Benevolent Society in Montreal. The disease is very prevalent throughout the city and several deaths have resulted.

ARMY MEDICAL CORPS

THE most noticeable feature of the training of the Army Medical Corps this summer will be the camp held at London. This camp will be an entirely medical one, no other troops being present.

All the Field Ambulances in Ontario and a number of medical officers will be detailed. The staff will be entirely composed of medical officers, and Colonel Jones, the Director General of Medical Services, will be in command. This camp will be from June 1st to 17th. The instruction will consist of lectures and demonstrations in all phases of army medical work; most of the time, however, will be taken up with working out the medical problems of the battlefield, commencing with a regiment in action and ending up with two divisions.

The situations will be made as real as possible by a careful system of umpiring, so that the actual time taken to perform these duties will be judged by the standard of what would be required on active service. A special feature of the camp will be that, each evening, there will be a meeting of all officers, when papers will be read and discussed; on one or two evenings this meeting will be in conjunction with the medical society of London. A somewhat similar camp on a smaller scale will be held at Farnham, for the Montreal field ambulances.

Canadian Literature

ORIGINAL COMMUNICATIONS

Public Health Journal, April, 1912:

Vaccines and the common cold .	Campbell Laidlaw.
Insanitary areas	James Roberts.
Factors in the spread of acute intestinal infections	H. W. Hill.
Sanitation in railroad camps . .	H. G. Nyblett.
Sanitary inspection of villages . .	H. O. Boyd.

Canadian Practitioner and Review, April, 1912:

Treatment of appendicitis	Herbert A. Bruce.
National and provincial responsibility in the tuberculosis crusade	C. A. Hodgetts.
Diagnosis of lympho-sarcoma of the stomach	O. C. Gruner.

Le Montréal Médical, April, 1912:

L'importance de la pathologie comparée	H. Roger.
De l'épithélioma en surface des muqueuses leucoplasiques	Prof. Reclus.
Les ictères de la grossesse et leur traitement	Paul Bar.
La paralysie saturnine	Prof. Dejerine.
L'apepsie gastrique	Prof. Labbé.
Chancre mou	Prof. Gougerot.
La pancréatite chronique biliaire et son traitement	Prof. Quénu.

Canadian Journal of Medicine and Surgery, April, 1912:

Physical and mental training in the treatment of nervous diseases	B. E. McKenzie.
Treatment of appendicitis other than operative	G. T. McKeough.
Trade or occupation dermatitis	D. King Smith.

Dominion Medical Monthly, April, 1912:

Methods of diagnosis of the nature of glandular enlargements at the root of the neck	O. C. Gruner.
Report of a cast of acute appendicitis, illustrating the value of a differential leucocyte count	J. P. Kennedy.
A plea for thorough and systematic study of the materia medica and therapeutics	Finley Ellingwood.

Medical Societies

CANADIAN MEDICAL ASSOCIATION

The annual convention of the Canadian Medical Association is to be held at Edmonton this year, from August 10th to August 14th. Dr. H. G. McKid, of Calgary, president, and Dr. Whitelaw, of Edmonton, secretary, visited the principal cities in British Columbia in April last, in order to secure a large attendance at the annual meeting. On the occasion of this gathering it is proposed to inaugurate a new system of registration for the Dominion. The necessary legislation to bring about the proposed change has been passed by the Dominion Parliament and by all the provincial legislatures with the exception of Ontario; it is expected that the measure will be passed by the Ontario Assembly during its present session. Under the proposed system, all certificates already issued to existing practitioners by the various provincial medical boards will be accepted by a Dominion medical board, which will then take over the examination of all medical men seeking to practise, and certificates issued by this board will enable the holders to practise in any part of the Dominion of Canada. An excursion to the famous Yellowhead Pass has been arranged as a pleasant termination to the convention. A special train is to be placed, by the Grand Trunk Pacific Railway, at the disposal of those who wish to take the trip.

The following information concerning rates is to hand. It applies chiefly to members from Port Arthur east. The figures given represent the fares from Montreal. In next month's issue there will be published the fares from all chief points to Edmonton and return, together with the places of the various excursions.

For the Canadian Medical Association meeting, at Edmonton, Alta., August 10th to 14th, 1912, the railways have authorized the rate of single first-class fare plus 25 cents, for the round trip from all points in Eastern Canada; rate from Montreal being $59.00, provided there are a hundred or more in attendance.

Delegates purchase one way tickets and obtain standard railway convention certificate, which on being filled in and signed by the secretary of the Canadian Medical Association, at Edmonton, Alta., will be honoured by ticket agent at that point for free tickets back to original starting-point, up to and including August 29th, 1912.

These arrangements apply to all Canadian railways only. Delegates desiring to use the Lake Route may do so on extra payment of $4.00 going or $9.00 return.

Delegates desiring to use the Lake Route will purchase one way tickets at single fare plus 25 cents, Montreal to Edmonton, and must time their departure to catch steamers leaving Port McNicoll, Port Sarnia, or Owen Sound, Ont., Saturday or Monday, August 3rd and 5th, 1912, and such certificates, on being filled in as outlined above, will be honoured up to and including August 29th, 1912, for tickets back to original starting-point on payment of the following arbitraries:

If route to Edmonton is via Upper Lake Route and delegate desires to return via Rail Route, charge will be $4.00 additional; if route to Edmonton has been Upper Lake Route and delegate desires to return by same route, charge will be $13.00 additional; if route to Edmonton has been via Rail Route, and delegate desires to return via Upper Lake Route, charges will be $4.00 going or $9.00 return. These additional amounts are to cover meals and berth on the Upper Lake steamers between Port McNicoll, Port Sarnia, Owen Sound, and Fort William, Ont.

There is a summer tourist rate of $106.00 from Montreal and other eastern points to Vancouver and Victoria and return. This tour may be extended to include San Francisco and return via direct United States lines through Chicago, on payment of an additional $15.00 or total $121.75.

In order to take in the Grand Canyon of Arizona, delegates must return from San Francisco via Santa Fé route and make a side trip from Williams, Arizona, to Grand Canyon of Arizona and return, for which an additional $7.50 will be charged.

Delegates who wish to take in Yellowstone Park on the San Francisco ticket, must return from San Francisco via Ogden or Salt Lake City and make side trip from one of these points to Yellowstone Park and return, charges for which vary from $25.50 to $55.50, including railway and stage transportation, meals and hotel accommodation while in the Park; the charge, therefore, is based on the tour and number of days spent in the Park.

For delegates who wish to take in Yellowstone Park, without making trip to San Francisco, the destination of the ticket would have to be Victoria, Seattle, Tacoma, or Portland, Ore., and the rate for same would be $106.75; and they would have to make side trip from Livingstone, Montana, or Pocatello, Idaho, to the Park and return, for which side trip, from Livingstone, charge would be from $5.50 to $55.00, according to tour and length of time the party would stay in the Park; return charge would be the same as from Ogden or Salt Lake City as outlined above.

The above is applicable to all Canadian railways. Those who desire to extend their trip from Edmonton to Vancouver or Victoria, do so via the Canadian Pacific Railway.

Tickets are good from August 2nd to August 6th, inclusive; the final return limit is August 29th.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE thirteenth regular meeting of the society was held Friday, April 12th, 1912, Dr. J. M. Elder, president, in the chair.

LIVING CASE: Hæmophilia. Dr. W. F. Hamilton. Dr. Malcolm presented this case for Dr. Hamilton. The patient, a male aged thirty, complains of having hæmorrhages in the skin at intervals. At the age of fifteen he had a large hæmatoma in the right groin followed by paralysis of the extensor muscles; two years later he had another in the right groin with paralysis, and two years after that another. He has had hæmaturia every second year since the age of eighteen. Starting about twelve years ago he had effusion in the knees, and at present these joints are much enlarged and crepitus is felt. On examination the blood shows a leucocytic count of five thousand, taken on several occasions, polymorphonuclears 60 per cent. With a view to increase the coagulability of the blood, 5 per cent. propeptone was given. Before injection the coagulation time was nine minutes, complete at twelve minutes; ten c.c. were injected and showed a similar coagulation time. No history of a tendency to bleeding was made out on either side of the family. The urine is of a high specific gravity but no blood cells are found. The patient presents the features of a mild case of hæmophilia, in which the coagulation time was moderately prolonged and the number of polymorphonuclear leucocytes falls considerably below the normal. The arthritic features are pronounced and the hæmatomata have developed both with and without trauma.

DISCUSSION: Dr. G. M. Byers showed a chart illustrating the transmission of hæmophilia from one generation to another, showing the incidence from the mother to the male offspring.

Dr. J. M. Elder: I would like to ask if the blood serum was tried in this case. We have had one boy at the Montreal General Hospital with severe epistaxis and we did reduce very markedly by injections of blood serum the coagulation period. Unfortunately it did not last long.

Dr. M. E. Abbott: Last summer I read a good deal of the work of Weil and his followers on blood serum injections. In many cases the patient was able to stand serious operations without excessive hæmorrhage, the effects passing off in forty-eight hours but long enough for the operation to be successful.

Dr. F. B. Gurd: I have treated several cases of hæmophilia with a coagulation time of eighteen to twenty-two minutes with injections of blood serum, and in four out of five cases the results were excellent so far as the stoppage of hæmorrhage was concerned, and also as regards the coagulation time.

Dr. R. E. Powell: I saw an infant, born in the fall of 1911, who died of hæmorrhage of the scalp following instrumentation in delivery; the next child had severe hæmorrhages following a dorsal slit for phimosis; injection of blood serum finally saved the child's life. Another child of the same mother, on the sixth day, had a fatal hæmorrhage from the cord and, going into the history, we found that the grandfather had almost died from the same cause on the eighth day after birth, and that the hæmophilic tendency was transmitted through the mother.

Dr. D. R. Malcolm: No blood serum treatment was given in this case, as we had not much success with it in other cases. Eight years ago this man had a tooth extracted and, according to his story, he bled for five days.

Pathological Specimens: Dr. L. J. Rhea: Meningitis. These two brains represent two types of the acute cerebral lesion. One child, a negro, was admitted two weeks before death with a septic temperature and indefinite signs of pneumonia. Later the whole left lung became consolidated. One week before death an acute endorcarditis was noted and three days before death a septic meningitis developed. One sees, over the base of the brain, an acute exudate which partially obscures the anatomical marking. A similar, though less extensive, exudate is in the meninges. The other child, aged nine, was admitted with symptoms of meningitis; lumbar puncture was done with relief, ten to one hundred c.c. of fluid withdrawn each time. Tubercle bacilli were found in the fluid. Besides the lesion in the brain, the patient had an acute miliary tuberculosis which involved the lung, spleen, liver, and kidneys. One sees over the base of the brain a very gelatinous type of exudate, the fluid from which was perfectly clear in contrast to the exudate of the brain in the case of pneumonia where the material was very cloudy. One sees along the blood vessels a very diffuse tuberculous process and as one proceeds towards the cortex of the brain the lesion is not so diffuse, but many individual tubercles can be seen. These two cases show two types of acute meningitis.

Case Report: A case of meningococcus endocarditis and septicæmia with late appearance of meningitis, by Dr. F. G. Finley and Dr. L. J. Rhea.

Discussion: Dr. L. J. Rhea: The specimens are from the case Dr. Finley has just referred to. Cultures were taken from the heart valves under every precaution of asepsis, and pure cultures of the meningococcus obtained. They are the characteristically biscuit shaped. Besides the heart, which shows acute endocarditis, I have a specimen of the skin which shows some of the hæmorrhagic spots, but, as you will see, it has faded. The kidneys showed an acute hæmorrhagic nephritis with infarct in the left kidney. From the centre of the infarct the meningococcus was recovered in pure culture. It was likewise recovered from various other organs and from the urine. The brain shows an exudate at the base, while the cord, as in many of these cases, contains very little exudate. There is an acute hæmorrhagic condition beneath the meninges of both halves of the brain. The sections of the kidney shown on the screen show very beautifully a marked acute hæmorrhagic nephritis.

Paper: Tuberculin treatment in dispensary work, by Dr. E. S. Harding. The technique of dilution and administration; the selection of patients and the general results. The main object of this paper is to bring out the giving of tuberculin at dispensaries or outdoor clinics, where it is rather different to giving it in sanatoria. I certainly have found that in giving it at the dispensaries you have greater hold on the patients. I have been quite surprised by the amount of work a patient can do during treatment and still maintain his weight and keep on improving. The last word in regard to tuberculin treatment is yet a long way off, and final judgement will be given only after long years of trial of different methods, and ascertaining which method gives the most permanent results.

Demonstrations: 1. Dr. D. F. Gurd showed an enamel pail with a cover, in the bottom of which was placed some cotton gauze saturated with three ounces of formalin and this gauze covered over with an inverted wire plate. Dr. Gurd uses this device in which to place his gown used when visiting infectious patients, the pail remaining at the residence of the patient until the visits cease.

2. A series of skiagrams were shown by Dr. S. H. Pirie illustrating diseases of the stomach.

TORONTO ACADEMY OF MEDICINE

The general meeting of the Toronto Academy of Medicine held on April 2nd, was devoted to a series of papers on Lord Lister.

A paper prepared by Dr. Malloch, of Hamilton, which is given elsewhere in these pages, was read by Dr. John Ferguson. Dr. Grassett then read a paper in which he spoke of Lister's work on the effects of germ and dust-laden air, his enunciation of the principle that putrefaction is developed from germs in the air, the opposition against antisepsis, and the final triumph of Lister's teaching.

The third paper of the evening, prepared by Dr. John Stewart, of Halifax, was read by Dr. Primrose. The subject of this paper was Lister's work on antiseptic surgery in the London Hospitals. A paper prepared by Sir Hector Cameron, of Glasgow, was then read by Dr. W. A. Young. Chief among the traits of character mentioned by Sir Hector were Lister's great appreciation of the debt he owed to his early teachers and to the work of Pasteur, and the marvellous patience, perseverance and interest in all objects, familiar or otherwise, evinced in his work.

Short addresses were also given by Dr. G. H. Bingham, Dr. R. B. Nevitt, Mr. I. H. Cameron, and President Falconer. Drs. Ross and McQueen spoke briefly in reference to the recent legislation.

At the regular meeting of the Medical Section, held March 12th, Dr. F. A. Clarkson presented a patient who exhibited multiple cutaneous and subcutaneous nodules. They would disappear and return again. A portion examined showed a giant-cell, and the Wassermann reaction was positive. He regarded it as a nodular syphiloderm. In discussion Dr. H. B. Anderson thought it might be an indurative erythema modified by syphilis. Dr. G. W. Ross exhibited two girls to illustrate the type of headache due to deficiency of lime salts; the headaches had disappeared when calcuim was given. Dr. A. R. Gordon showed a patient who had had thrombosis of the posterior tibial and tracheal arteries following scarlet fever. Resolution had occurred although blebs had begun to form on the affected parts. The condition was very rare after scarlet fever. Dr. Anderson gave clinical reports showing the different types of hæmolysis met with such as Heriodis Purpura, Schönleuis Disease, etc. Considerable discussion followed in which the intra-venous administration of normal horse serum in these conditions was advocated by Dr. A. J. Mackenzie.

A MEETING of the section of state medicine was held, March 28th. In the absence of the chairman, Dr. J. N. E. Brown occupied the chair. Dr. George Strathy read a paper on "Lactation and breast feeding." He referred to recent physiological work showing the galactagogue effect of glandular extracts and the inhibiting effect of extract of placenta. He believed babies were never infected with tuberculosis through the maternal milk but from the sputum of the mother. He dwelt on the advantages of mixed feeding and wet nursing, and advocated that the academy should keep a registry of available wet nurses.

Dr. Rudolf read a paper on the dangers of underfeeding infants. He approved of Budin's method of feeding on boiled and citrated whole milk. Dr. Caulfield recommended bottle feedings when a nursing baby began to lose weight, and said he preferred complemental mixed feeding to alternated mixed feeding.

Dr. Amyrt thought that forty per cent. of bone and joint tuberculosis were bovine in origin. Dr. Strathy considered that bone and joint tuberculosis were usually secondary to lung and gland infection.

Dr. Amyrt also read a paper on typhoid epidemics. He referred to Port Hope and Sarnia and pointed out the necessity of promptly reporting any cases of the disease.

AT a meeting of the pediatric section, Dr. E. S. Ryerson presented a girl of three and a half years who had an obstinate constipation. The bowels had not moved without enemata since she was nine months old. Examination revealed a markedly dilated condition of the colon, especially of the symoid portion. A series of skiagrams taken after the ingestion of bismuth paste confirmed the opinion that the atony was essentially of the colon. The case was thought to be one of Hirschsprung's disease.

Dr. H. T. Machell presented two cases of delayed resolution in pneumonia. Both presented the ordinary symptoms and physical signs of lobar pneumonia. In one case the course had not modified after twenty-nine days and in the other after forty days, the emaciation was all that distinguished the case from one of four days duration.

Dr. H. C. Parsons exhibited several skiagrams illustrating various conditions of tuberculosis of the thorax. He emphasized the value of the x-ray in diagnosis, instancing several cases where an advanced state of infiltration of the lung was detected by this means, when the patients otherwise appeared in good health. He counselled the routine examination of all the members of a family or household from which a case of tuberculosis was known to have come. In support of this opinion, he related a case in which, after one parent had died of pulmonary tuberculosis, the children were put under observation. One child appeared in good health for several weeks and then developed an irritability and change of disposition, changing in a typical manner as the meningeal affection progressed. The case came to autopsy three months after the first symptoms appeared.

A paper was read by Dr. Bothwell on dental prophylaxis in children. He urged the necessity of introducing only clean instruments into the child's mouth, e.g. tongue depressors and thermometers; and criticised the carelessness of some physicians in failing to cleanse their fingers carefully before examining an oral cavity. The proper method of brushing the teeth was illustrated and the use of antiseptic dentrifrices disparaged in comparison with frequent mechanical cleansing.

NEW BRUNSWICK MEDICAL SOCIETY

At the annual meeting of the physicians and surgeons of New Brunswick, the following officers were appointed: President, Dr. A. F. Emory, St. John; treasurer, Dr. Thomas Walker, St. John; registrar, Dr. S. S. Skinner, St. John.

EDMONTON MEDICAL ASSOCIATION

The Edmonton Medical Association met April 3rd. A paper on auto-intoxication was read by Dr. J. S. Wright. Dr. H. E. Jamieson read a paper on treatment by the use of vaccines. This society, which was organized in 1905, is growing rapidly and its meetings are well attended.

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DOES CHOLECYSTENTEROSTOMY DIVERT THE FLOW OF BILE FROM THE COMMON DUCT?

By Edward Archibald

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Associate Surgeon to the Children's Memorial Hospital, Montreal
Lecturer in Clinical Surgery, McGill University

OUR knowledge of the pathogenesis of pancreatitis is still, in many of its aspects, that of surmise only. In one particular alone do we seem to stand on sure ground. The action of bile, if it gain access to the pancreatic duct, in precipitating the attack of pancreatitis has been so clearly demonstrated by the observations of Opie and of Flexner, and is now so generally known, that one need do no more than refer to the fact. Opie's original observation was so striking a one, and the subsequent experimental work so convincing in this respect, that, in the minds of most clinicians to-day, a pancreatitis is without further question assumed to be dependent upon biliary infection, usually the result of gall-stones. This is an error. Nearly half of the cases of pancreatitis observed during the last ten years in the Royal Victoria Hospital have been unassociated with gall-stones, and many of them have shown no gross evidence of infection. This, however, is by the way. What is of importance for our present purpose is that this conception of the infectivity of bile and of obstruction at the papilla of Vater to the exit of bile into the duodenum, has been the chief factor in determining the present day treatment of pancreatitis, namely, the treatment by bile drainage or bile diversion. so called. It is unnecessary in this place to relate the history of the development of this plan of treatment. Enough that a drainage of the bile over a considerable period of time is advised, almost unanimously, by the leaders of surgery in this country and abroad.

It has been, however, a matter of dispute, whether one should drain the bile by a cholecystostomy or a cholecystenterostomy. The former has been called a temporary, and the latter a permanent, drainage; and on the assumption of the correctness of the ideas indicated in these terms, the argument has usually concerned itself, to put it briefly, with the sufficiency of the one or the necessity of the other. A short quotation from an article on pancreatitis by one of the accepted authorities will, perhaps, illustrate the matter better than could any words of the writer. Wm. J. Mayo ("The Surgical Treatment of Pancreatitis," *Surgery, Gynæcology, and Obstetrics*, December, 1908), writes as follows: "The surgical treatment of chronic pancreatitis is not usually directed to the pancreas itself . . . . but rather to the biliary tract, and is best accomplished by diverting the bile to the surface by means of cholecystostomy, or to a new point in the gastro-intestinal canal by cholecystenterostomy.

"In those cases of chronic pancreatitis in which no stones are present, cholecystostomy cannot be relied upon, because the continuation of the pancreatic disease lies outside of and beyond the biliary tract; and in these cases more prolonged, if not permanent, diversion of the bile from its pancreatic association is necessary, and cholecystenterostomy is indicated."

The reasoning which leads to conclusions of the nature indicated by the quotation just made is based upon the fact, or the assumed fact, that a swelling of the head of the pancreas constitutes such an obstruction to the flow of bile in the common duct, as to render it apt to force the bile into the opening of Wirsung's duct and so set up an inflammation in that gland. And the researches of Opie and others, who found that, in approximately two-thirds of the subjects examined, the common duct ran through the substance of the pancreatic head, while only in one-third did it run outside the gland, have been freely cited in support of this reasoning. If the common duct is ordinarily surrounded by pancreatic tissue, any material degree of swelling of that tissue—so runs the argument—would obviously compress the duct and dam back the bile.

Now, however well proven such a train of events may be in a certain proportion of cases, the conclusion has been forced upon the writer that that proportion is a quite inconsiderable one. Two clinical facts must have impressed themselves upon most surgeons of any experience. One is that jaundice, in cases of pancreatitis, save in the severe lesions of acute and great swelling, is conspicuous by its absence; and that, when present, it is remarkable for its slightness and its transitoriness. In other words, pancreatitis usually leaves the common duct patent, whether the duct run through the pancreas or not. The other fact is that the ordinary cholecystostomy drains to the surface no very great proportion of the total quantity of bile secreted, except in cases where the common duct is seriously and permanently obstructed; and, moreover, it is not easy by such an operation to maintain for long the drainage of even that small proportion of bile that does find an exit by this way. Nature loves to tread the old paths, and is not easily drawn aside.

Considerations of this nature led the writer several years ago to suspect the validity of the reasoning previously indicated, that reasoning, indeed, which suggested the recommendation of cholecystenterostomy as a method of diverting the bile from the common bile duct and the neighbourhood of the pancreatic duct for the cure of chronic pancreatitis. A gastroenterostomy in the presence of a patent pylorus will not divert the stream of food from the pylorus, if the work of Kelling and of Cannon and Blake is to be definitely accepted. In the same way it seemed possible, even likely, from analogous considerations, that a cholecystenterostomy, in the presence of a patent common duct, would not divert the bile from its natural course.

It was thought that a few experiments would settle the question easily. Accordingly these were undertaken over two years ago, and the early results were briefly mentioned in an address given about that time.*

The experiments have since been carried on at long intervals until recently, and in all eight dogs have been operated on. The general plan of the experiments has been as follows: A cholecystenterostomy was done, using a chance loop of the small bowel; this loop was then isolated from the rest of the bowel by resection; one end was closed and inturned, while the other, left open, was sutured into the abdominal wall. Great care was taken to preserve sufficient mesentery to nourish this loop. The cut ends of the general bowel were then reunited, and the abdominal incision closed, save for the point where the open end of the isolated loop was brought out. In closing, care was taken to leave abundant room for the passage of the bowel, so as to exclude the possibility of obstruction by the muscle of the abdominal wall.

It was assumed that, if the cholecystenterostomy actually did the work usually ascribed to it, there would occur a copious outpouring of bile on the surface.

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*"Pancreatitis, the Acute, Subacute, and Chronic Recurring Forms of the Disease." *Maritime Medical News*, March, 1910.

Eight dogs have been used for the purpose of this investigation. In all, profound ether anæsthesia was given. The anastomosis was made by suture in all but one, when a small Murphy button was employed. The size of the anastomotic opening was rarely less than one inch, an opening which in dogs, usually of terrier size in this series, is relatively larger than that made in the human in this operation. The opening was proved to be patent in all the dogs at autopsy.

The operation being a more or less difficult one by reason of the smallness of the parts and the remoteness of the gall-bladder, hidden under the lobes of the liver, it happened that the first three animals died of shock or of infection within the first four days. The next lived about a week, and the succeeding ones survived for long periods of time.

While one or two protocols are appended in detail, it may be said at this point, for the sake of brevity, that in none of the animals was there discharged from the cholecystenterostomy opening more than a few drops of bile in the twenty-four hours. It was found impossible to collect and measure accurately the quantity escaping. Yet by keeping the animal in a cage or a room apart, or by keeping an absorbent cotton dressing on the wound, it was not difficult to estimate that approximately only 2 or 3 c.c., at most, were escaping. On one occasion, a cotton wool pad which had been on the wound for twenty-four hours was soaked in a measured quantity of distilled water, and then thoroughly expressed. The amount got in this way was only 3½ c.c. in excess of the original amount; the quantity of bile, therefore, passing by the cholecystenterostomy was about 3½ c.c. in the twenty-four hours, in this instance. Even this amount was exceptional. Ordinarily, no bile at all escaped.

The failure of the new opening to divert the stream of bile was conspicuously evident in the case in which a Murphy button was employed for the anastomosis. This dog lived only four or five days. On the third day the suture line gave way, the button dropped out, and the gall bladder was visible in the depths of the wound with a large hole in it. Even with this perfectly free passage, the amount of bile that came through was minimal.

PROTOCOLS

No. 1. Good-sized, whitish-brown bull-dog. Operation, January 28th, 1911—Cholecystenterostomy with isolation of loop of ileum as above described. Anæsthetic, morphine and ether. Anastomosis three-quarters of an inch long, and made in fundus of gall-bladder. One end of isolated loop of small bowel crushed and inturned; the other end sutured in abdominal wound. The aperture in peritoneum, muscles, and skin was left very loose to avoid constriction.

January 30th. First dressing. Wound clean. Mucous discharge from projecting stump of bowel, but no bile. Stools well coloured. No bile in vomitus.

February 2nd. Dressed—no traces of bile on dressings (plaster cast).

February 20th. Since last note, bile has been found to the amount of a few drops on floor of room in which animal is kept, or in cotton wool placed in the bottom of cage, but on some days, none is found.

February 27th. Attempts to keep cup fastened over wound regularly fail. Cotton wool is kept on under plaster for twenty-four hours, and this wool, by expression in a meat-presser (as above mentioned), yields 3½c.c. bile.

The frequent passage of a blunt forceps down the loop of bowel as far as the anastomosis proves the absence of any retention of bile, more than three or four drops, in the loop. There is no constriction of bowel in its passage through the abdominal wall. For days at a time, no bile whatever can be found escaping. Observations shows that the dog is not taking up escaping bile by licking the wound. The position of the wound in any case renders this well-nigh impossible.

This dog was kept under observation till September 27th, 1911, during which time bile was never observed to escape save occasionally, and in minute quantities. It was then killed. Autopsy showed the anastomosis to be three-quarters of an inch in length, and to be patent. There were merely traces of bile in the gall-bladder and in the isolated loop of bowel. The organs were otherwise healthy.

No. 2. Large brown mastiff. Operation February 11th, 1911. Same as above. Anastomotic opening one and a half inches long.

February 13th. First dressing. No bile on dressings.

February 16th. Second dressing. Dressings soaked with serous and mucous discharge very slightly bile-stained. Forceps passed down loop for three inches and dilated; no flow of bile. Wound healthy. Dog in good condition. Stools coloured a deep yellow.

Death on the morning of the 18th, from general peritonitis, which developed first on the 17th, as the result of an accident. Post mortem showed that the bowel had been torn away from its attachment to the gall-bladder over about three-quarters of the circumference of the anastomosis. The gall-bladder was collapsed. In the pus which filled the abdominal cavity there was no definite evidence of bile.

The natural conclusion would seem to be that, unless the obstruction to the common duct is considerable, and bids fair to be permanent, in cases of chronic or subacute pancreatitis it is useless to do a cholecystenterostomy in the expectation of securing permanent bile diversion.

But obstruction of the common duct, as evidenced by marked jaundice, or jaundice persisting longer than a few days, is an altogether exceptional event in pancreatitis. Cholecystostomy is therefore, in the writer's opinion, the operation of choice, and is to be considered the normal procedure. Although it cannot be counted on to divert, any large proportion of the total bile excreted, it does divert at any rate such an amount as may very possibly relieve some of that pressure in the common duct under which bile is forced out into the duodenum. In a series of observations on patients with a cholecystostomy for the condition of pancreatic swelling, it has been rare to find the twenty-four hour amount of bile in the receptacle attached to the drainage tube exceed six ounces. And the normal amount excreted varies from 16 to 27 ounces. In the writer's cases of chronic pancreatitis such bile drainage by cholecystostomy has been kept up for eight to twelve weeks, with, hitherto, satisfactory results.

Interesting as these results are, they have by no means cleared up the question of why bile drainage, even partial as it certainly is, appears to have a beneficial effect on the condition of pancreatic swelling. It may be, as above suggested, that this beneficial effect is due, not to a diversion of the bile in itself away from the open door of the pancreatic duct, but to a reduction of the pressure in the common duct by virtue of a diversion of part of the bile through the gall-bladder. In a series of recent experiments, which will form the subject of a later paper, it has been found that the hydrostatic pressure in the common duct, that is the pressure which the Oddi-Helly sphincter at the papilla of Vater will oppose to a column of water, is surprisingly high. The sphincter is rarely completely overcome by any pressure less than 600 mm. And before the sphincter yields, the gall-blader always becomes extremely tense. It is, therefore, easily conceivable that under certain circumstances, particularly prolonged absence from food (acid chyme arriving in the duodenum is probably the physiological stimulus to relaxation of the bile sphincter), the bile may come under considerable tension in the hepatic and common ducts and in the gall-bladder before the sphincter is mechanically forced. During this state of tension, it is again conceivable that small quantities of bile might be forced back into the pancreatic duct, and there either cause or help to maintain a condition of pancreatitis. Under such circumstances, a cholecystostomy would act as a safety-valve, preventing the occurrence of any marked tension in the common duct during the intervals between the times of physiological relaxation of the papillary sphincter, and in this way its probable beneficial action in chronic pancreatitis might be explained.

It may be remarked, in passing, that the condition of fasting above referred to as being likely to leave the sphincter closed, is especially frequent in chronic alcoholics, in which class of patient the incidence of pancreatitis is so frequent.

CONCLUSIONS

1. Cholecystenterostomy in the dog, in the presence of a patent common duct, does not divert the flow of bile from the common duct to any appreciable extent.

2. Cholecystostomy, which does succeed in diverting a portion of the bile from the common duct, is therefore the operation of choice for cases of chronic and subacute pancreatitis.

LABORATORY TESTS IN THE DIAGNOSIS OF GENERAL PARESIS

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SINCE the discovery in 1900, by Ravault, Widal and Sicard[1], that the cell count of the spinal fluid is increased in parasyphilis, a large amount of laboratory investigation has been carried on along similar lines. In 1901 Achard, Loefer and Lanbry[2] discovered that the spinal fluids of parasyphilitics had a higher protein content than the normal, and that the nature of this protein was a globulin. In 1906 Wassermann and Plaut[3] enlarged the field of investigation by showing that the spinal fluid in these cases was also capable of deviating complement; or, to use a more common phraseology, gave a positive Wassermann reaction. In the latter work[4] they show that the blood of paretics is even more constant in deviating or fixing the complement. The findings of others, especially the French observers, do not agree with Plaut's in this respect, but show a higher percentage of positive reactions in the spinal fluid than in the blood serum. Noguchi, in 1909, described a simple method of demonstrating the increase of globulin by the addition of butyric acid and sodium hydrate[5], and since that time this test has borne his name. Nissl, Hendel, Nonne, and Apelt[6] used the saturated ammonium sulphate solution to prove the presence of globulin, and Ross and Jones,[7] by a modified technique, made the test more delicate, although the same solution was used.

During the past eighteen months, a series of cases have been investigated in the Toronto Hospital for the Insane, in the following manner: On admission the subjective history was secured, and the physical and mental examination made by the physician in charge of the case. The patient and history were then presented at a conference of the medical staff, and a provisional diagnosis recorded. In this manner, two classes of cases were differentiated: (1) patients presenting well-defined clinical evidences of general paresis; (2) patients who were clinically less clear cut, but where paresis was a possibility; e.g., certain cases of chronic alcoholism.

In all, forty-six cases were investigated in an endeavour to determine which are the most reliable, and what can be deduced from an examination by these tests. The work has been carried out in two parts. One of us (McVicar) undertook the cell count, the Noguchi (butyric acid) test, and the ammonium sulphate reaction. The estimation of the number of cells was made in about half the cases by Ernest Jones's method, and in the remainder by the more tedious method of examining ten preparations with an ordinary white blood pipette, with the counting chamber 1 mm. square and 1-10 mm. deep; a negligible amount of methyl violet was added to colour the cells. The other two (Bates and Strathy) examined the sera and fluids for the amboceptor reaction. The technique here used was similar to the original Wassermann method, except that alcoholic extracts of dog's liver and human heart were used as antigen instead of a watery extract of syphilitic liver. The sera and fluids were tested without knowledge of the history of the patient, and numerous controls of non-paretic sera and fluids were intermingled in the tests.

An analysis of the thirty-eight clinically undoubted cases of paresis shows a positive Wassermann reaction in all the spinal fluids except that of "F.T." and "T." The former of these two was negative for all the tests, except that once his serum gave a doubtful reaction; his case will be referred to in detail later. The latter gave a doubtful reaction, which was positive when repeated some months later.

The twenty-five cases in which the blood serum was examined were all positive except the afore-mentioned "F.T." If his case be excluded, the results then give 100 per cent. positive results in the spinal fluid and serum of all the paretics tested. His case is doubtful. The cell count in all these cases was increased, although "D." gave a count of only six per c.mm., which is not necessarily pathological. The Noguchi and ammonium sulphate tests for globulin gave similar results in all cases, so that one does not appear to be less accurate or more delicate than the other. The globulin tests were positive in thirty-six out of the thirty-eight cases. "F.T." gave one of the negative results, and "T's." fluid was negative the second time, although positive the first time.

Patient.	Case Book No.	Diagnosis.	Globulin Estimation.		Cell Count.	Wassermann Reaction.		Additional History.
			Noguchi.	Am. Sulph.		C. S. F.	Blood.	
			Class (1) Undoubted Paretics.					
B.	104	G.P.I.	+	+	240	+	+	Aortitis
D.	374	G.P.I.	+	+	40	+	+	
W.	447	G.P.I.	+	+	10	+	+	Aneurysm of Aorta.
P.G.	450	G.P.I.	+	+	83	+	+	
P.	460	G.P.I.	+	+	90	+	+	
M.	512	G.P.I.	+	+	210	+	+	
B.	530	G.P.I.	+	+	98	+	+	
Y.	591	G.P.I.	+	+	75	+	+	
C.	743	G.P.I.	+	+	60	+	+	Endocarditis Mitral.
M.	770	G.P.I.	+	+	18	+	+	
C.	838	G.P.I.	+	+	320	+	+	
B.	865	G.P.I.	+	+	96	+	+	
T.	877	G.P.I.	+	+	379	+	+	
N.	879	G.P.I.	+	+	79	+	+	
S.F.	902	G.P.I.	+	+	158	+	+	Juvenile Age 18.
J.	911	G.P.I.	+	+	25	+	+	
D.	919	G.P.I.	+	+	6	+	+	
R.	935	G.P.I.	+	+	35	+	+	
D.	1000	G.P.I.	+	+	42	+	+	
S.	1002	G.P.I.	+	+	540	+	+	
D.	T.G.H.	G.P.I.	+	+	160	+	+	
F.R.	T.G.H.	G.P.I.	+	+	40	+	+	Juvenile, Aged 13.
F.T.	866	G.P.I.	−	−	0	−		
	Repeated 1 week later			......	......	......	−	
T.	891	G.P.I.	......	......	154	+	....	
						−	Not done	
	Repeated 8 months later			......	130	+	+	
L.	68	G.P.I.	+	+	48	+	Not done	
D.	99	G.P.I.	+	+	180	+	Not done	Endocarditis Mitral
C.	101	G.P.I.	+	+	130	+	Not done	
J.	118	G.P.I.	+	+	189	+	Not done	
L.	340	G.P.I.	+	+	448	+	Not done	
D.	572	G.P.I.	+	+	98	+	Not done	
P.	670	G.P.I.	+	+	224	+	Not done	
D.	719	G.P.I.	+	+	98	+	Not done	Endocarditis Mitral.
M.	784	G.P.I.	+	+	200	+	Not done	
F.	825	G.P.I.	+	+	198	+	Not done	
B.	852	G.P.I.	+	+	9	+	Not done	
O'C	920	G.P.I.	+	+	80	+	Not done	
B.	892	G.P.I.	+	+	229	+	Not done	
B.	822	G.P.I.	+	+	90	+	Not done	

Patient.	Case Book No.	Diagnosis.	Globulin Estimation.		Cell Count.	Wassermann Reaction.		Additional History.
			Noguchi.	Am. Sulph.		C. S. F.	Blood.	
			Class (2) Suspected Paretics.					
M.	503	Suspected G.P.I.	–	–	43	–	–	Alcoholic.
	Repeated 4 weeks later			......	20	+		
J.M.B.	785	Suspected G.P.I.	–	–	2	– +	Not done	Syphilis 17 years ago.
S.	788	Suspected G.P.I.	–	–	0	+	Not done	Alcohol and Morphine.
G.	840	Suspected G.P.I.	–	–	0	-	Not done	Discharged improved.
L.	908	Suspected G.P.I.			21	+	Not done	A prostitute.
	Repeated 10 months later				0	–	–	
McG.	970	Suspected G.P.I.	–	–	0	-	Not done	Alcoholic.
C.	994	Suspected G.P.I.	–	–	15	–	–	Korsakow's Hist. Syphilis 17 years ago.

"F.T." is an Italian labourer, aged fifty-two years. He has worked hard and drunk beer for years. Two years ago he had a right hemiplegia with some degree of aphasia. He now has loss of pupil reflexes; loss of knee jerks; there is a general muscular weakness, most marked in the right arm. There is a very well-marked, generalized, muscular tremor, accentuated by effort. He has some loss of memory and some difficulty in speech. He says he understands all questions asked him, but cannot express himself well since his aphasia occurred. He shows some exaltation. At conference, opinion of the diagnosis was divided, the possibilities being paresis, imbecility, arterio-sclerosis, Korsakow's psychosis, or some association of these. It will be noticed that the laboratory findings in his case, except for one doubtful reaction in his blood serum, are negative. Further observation and investigation of his case promises to be of great interest.

In the next series, those suspected of paresis on admission, results of the tests vary. Of eight cases, six later turned out not to be paretics. In the other two (J.M.B. and L.) the diagnosis is still in doubt. Both gave doubtful globulin tests, and positive

Wassermann reactions on the cerebro-spinal fluid. "J.M.B." had syphilis seventeen years ago, and has had mental symptoms for seven years, with some exhaltation, lately very marked. His father and sister were insane. His spinal fluid gave a cell count of two. The serum was not tested. He may be an early paretic. "L." was a prostitute, but gave no history of infection. Her clinical symptoms are unequal pupils, exaggerated knee jerks, and loss of memory. Her fluid gave a doubtful globulin test, cell count of twenty-one, and a positive Wassermann reaction. On repeating all these tests eight months later they were negative, and also the blood serum. Of the six cases which proved not to be paresis, the fluid of one first gave a doubtful reaction, and, on repeating four weeks later, was negative. The fluid of another gave a positive reaction, and in the rest negative reactions were obtained. The cell count in two was increased, and one of these gave a doubtful result to the globulin test.

In one hundred and fifty sera and twenty spinal fluids of patients with no history or symptoms of syphilis, the Wassermann reaction was not present. The fluids were taken from cases of non-infective psychoses, tuberculous and meningococcic meningitis, brain tumours, paralysis agitans, disseminated sclerosis, and healthy persons.

Too much importance should not be placed on the results of a series so limited in number, but it would seem that from these cases the following can be deduced: (1) An increased cell count is present in nearly all cases of paresis but may also be found in Korsakow's psychosis, and meningeal conditions of various origins. (2) General paresis without a positive Wassermann reaction in both spinal fluid and blood serum is rare. (3) Globulin can be detected in the spinal fluid of nearly all paretics. The Noguchi and ammonium sulphate tests are of equal delicacy. (4) A positive Wassermann reaction may be obtained in the spinal fluid of patients who have had syphilis and who cannot yet be diagnosed clinically as cases of general paresis.

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THE BONE-MARROW, A STUDY FROM THE STANDPOINT OF THE CLINICAL PATHOLOGIST

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THE number of years which have elapsed since the discovery that definite changes take place in the bone-marrow during the course of acute infections is comparatively small. The literature abounds with brief references to the structure of this tissue in the various diseases of the blood, but it is exceptional for detailed cell-counts to be presented even in these cases. It is the object of the present essay to indicate in how many directions the investigation of the finer changes in the bone-marrow may serve a useful purpose to the clinician.

The conclusions presented are based on the observation of marrow tissue obtained from about two hundred autopsies performed at the Royal Victoria Hospital, Montreal; and from rats and rabbits, the subject of experimental inoculations. The spleen and lymph nodes were investigated in the same series of cases in order to contrast the appearances in the different hæmatopoietic organs.

I. The Kaleidoscopic Characters of The Bone-Marrow Tissue. The most remarkable feature of the histology of the bone-marrow is its inconstancy. It is one of the chief achievements of modern histo-pathology to have demonstrated the mutability of marrow-tissue during the development or growth of the individual, during infections, and, to a less defined extent, during the course of chronic non-infective diseases. The contrast between the effects of such disordered states as these and the changes characteristic of the leukæmias cannot fail to impress the student with a definite sense of mystery in regard to the fundamentals upon which such variations depend.

The first point, therefore, which one wishes to emphasize, is that the relative proportions between the different cell-constituents of the marrow, as well as the actual variations of cell-type met with, are ever changing; that there is remarkable rapidity (F. F. Leighton[6]) of adaption to incoming morbid or physiological

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stimuli; that the changes in which one or other of a group of cells are concerned, may themselves be multiple in type, regenerative, degenerative, reparative, aberrant; that we have the same impression of restlessness and excitement among the parental inhabitants of this tissue as is seen in a crowd of spectators who press forward beyond the barrier for the purpose of obtaining a better view of the object of their visit but are forced back by the rigid rules adopted by the vigilators of the course for the maintenance of order.

An attempt to bring mental order out of such a chaos of facts would seem more than hazardous; it would suffer from the lack of common-place terms suitable for its adequate literary expression. On the other hand, a due recognition of the endless variations in morphology of the cells of the bone-marrow, the long succession of intermediate stages which is passed through before the ancestor has given place to the finished member of the hæmatic community, cannot fail to be of value to the student of disease as well as to the clinician who desires complete understanding of the nature of the phenomena with which he is constantly presented in the course of his practice.

II. Practical Utility of a Study of the Subject. The question has arisen as to whether an investigation of the bone-marrow *in a given patient* could possibly aid diagnosis or prognosis. During very recent years it has been remarked that cases arise in which a mere blood examination proves inconclusive. The differentiation of the anæmias, the diagnosis of certain forms of lympho-sarcoma, the significance of splenic enlargements, the significance of certain glandular enlargements whose nature is doubtful as far as ordinary clinical methods go,—all these problems might come to solution if the bone-marrow were studied during the life of the patient.

While admitting that this method of clinical pathological study might be called for only at rare intervals, there can be no doubt that it is more than justifiable for the hospital pathologist to determine whether or no such an addition to the armamentarium of the clinician be feasible. Cases arise in every community where a valued life demands the help of every branch of medical research.

Even should our efforts in the above direction prove futile, we should still find that the study of experimentally diseased marrow and of fresh autopsy material would furnish us with striking facts which go to explain how death may arise under certain conditions without obvious disease of the internal organs. They also serve the purpose of explaining why some subjects succumb to, and others recover from, certain infections and intoxications. In other words, a routine study of bone-marrow at autopsy frequently throws valuable light upon the pathology of the case.

III. HISTORY OF THE SUBJECT. Inasmuch as the important facts on this subject are now very numerous, while the number of workers is comparatively small, there is little call for a complete account of the historical aspect of the question. Every one knows of Ehrlich's fundamental pioneer work in this direction. In England, the work of Muir[11] in 1902, and of Carnegie Dickson[2] in 1908, has provided the subject-matter of everything relating to bone-marrow that has so far appeared in any English text-book. In the German literature, the investigators of this tissue are also the celebrated hæmatologists of the present day—Dominici, v. Domarus, Pappenheim, Benda, Naegeli, Schridde, Hirschfeld, the late E. Grawitz, and others.

One point, however, calls for particular notice. The methods of cytological investigation utilized by English writers have been limited to the hæmatoxylin, the Ehrlich triacid, and eosin and methylene-blue processes. These may be regarded, for practical purposes, as obsolete. The use of azur dyes is essential to an adequate study of bone-marrow cells, because the question of the significance of cellular lipoids in these cells seems to be all-important before a true conception can be gained of the relations between immunity processes and marrow reactions.

IV. CORRELATION OF BLOOD-CELL COUNTS WITH MARROW-CELL COUNTS. The clinician does not stand by any one given sign in making a diagnosis but rather takes a general survey of every system. The same rule should hold good in studying the pathology of the bone-marrow. It is essential to know exactly what cells are to be found in the circulating blood, and to have some idea of the state of the other hæmatopoietic organs. It is just here that the need of a reunion between clinician and pathologist is well shown. The former would tend to desire an interpretation of cytological findings from the latter, but the pathologist can only be one-sided if he does not himself correctly appreciate the conditions in the *living* patient. As this matter is very important, I would like to lay stress on this second thesis,—the *correct interpretation of the blood count itself*. There are certain details required for comparative studies of this kind which can only be touched upon at present, because they themselves would require lengthy exposition. Suffice it to say that the ordinary "differential count" is presented to the clinician in such a way that he cannot find an answer to the following questions: As regards the neutrophile leucocytes, how many of these have been just liberated into the circulation, and how many of them are old-stagers? Are any of them succumbing to any particular type of toxin? Are any of them abortions—that is, delivered, from their parents, into the circulation prematurely? As regards the lymphocytes, are these juvenile, or are they decrepit and old? Do any of them come from abnormal sources? How many of them, to invent some new words for expressing new ideas, are adsorptoid and how many nutrioid, etc.? And so on.

In other words, the blood-film does not tell us that the patient is suffering from disease so-and-so, whose description is on page such-and-such of our text-book of medicine or surgery, but it merely represents a transient state of blood and its factories induced either by the morbific agent or by natural physiological periodic stimuli. Therein lies the key to the solution of all our difficulties about blood morphology and marrow-cell morphology. There is no pathognomonic sign for any disease either in the blood or in the marrow, except in the case of detection of parasites or bacteria. Erythroblasts, megaloblasts, Rieder cell-types, plasma cell-types, etc., etc., are not specific findings. All we might say is that they are more common in such and such diseases.

My investigations during a number of years have led me to feel very strongly on this aspect of the study of blood-disease—the finding of finer variations in cytological characters in strictly physiological conditions* suggests how inadequate our routine methods of blood examination are from the scientific point of view; this is unavoidable because of the consumption of time involved in full blood-counting.

These remarks apply with even more force in the case of the bone-marrow. We must not be led away by an idea that an examination of this tissue either intra vitem, sub finem vitæ, or post mortem, is going to prove the existence of this or that disease. It will inform us of a transient state of the hæmatopoietic organ. If changes have been induced in it which are unavoidably long in returning to the normal cycle, then in those circumstances we may learn something of value, provided we know also what output of cells there is into the circulation.

The greatest mystery before us at present is expressed by this question,—why do immature cells usually fail to enter the blood-stream, and why do such cells, in so-called leukæmias, suddenly, irretrievably, persistently, overflow their barriers? From the foregoing considerations, then, we learn three things: first, that the histology of the marrow is not complete unless we know which of the cells are entering the blood-stream; second, that the finer structure varies from hour to hour or from day to day according to laws at present unknown to us.

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*I refer here to diurnal cyclical variations of lymphocyte forms, and the effect of muscular exercise upon them.

V. Fallacies in Interpretation of Results. The fallacies to which the pathologist is exposed are serious, but correct adjudication of the data will do much to avoid them. As we have just stated, we must beware against diagnosing a name from the cell-count, and we must take the *toute ensemble* of the patient's body into consideration.

There is, however, this further problem,—is the marrow the same in composition throughout the skeletal system? A number of observers have asserted that it is not, more from theoretical ideas than from an actual investigation. As far as I have seen this objection is making a mountain out of a mole-hill. In other words, the structure of the marrow of the ribs, sternum, vertebræ, and tibia, in a given case, is frequently constant,—within reasonable limits. In some cases, it is true, there may be considerable variation. It is chiefly in regard to the question of lymphomatous or neoplastic nodules disseminated irregularly through the osseous system that we have obvious exceptions. But it would be as reasonable to state that no observation on the histology of the liver (e.g.) would be complete unless serial sections were prepared and studied with the oil immersion lens from end to end. Such a procedure is obviously impracticable. If it is permissible to deduce pictures of morbid states in the liver from the careful study of several sections, it is equally permissible to deduce pictures of morbid states in the marrow from the careful study of several film preparations. Our results, finally, are quite well controlled by the concomitant blood-count and, sometimes, by the study of other tissues.

VI. Technique. My reference to technique must be brief. The idea of extracting samples of bone-marrow from the living originated with Ghedini[3] in 1908. An obvious source of material of this kind lies in excised ribs and amputated limbs. These have been utilized in the Montreal Royal Victoria Hospital. Further, through the kindness of Dr. Archibald, definitive puncture of the tibia was made on two of his cases with satisfactory results. The technique of this operation need not be considered here. The material is examined by means of film preparations and by ordinary sections. The former alone enable cell-counts. The staining methods are reducible to one,—the combined Jenner-Giemsa, or panoptic staining method of Pappenheim.

VII. THE CELL ELEMENTS OF THE BONE-MARROW. The nomenclature which I adopt in the following remarks is largely that introduced by Pappenheim, who has done the inestimable service to science of placing the cytology of the blood cell on an absolutely sound basis. The cells of normal bone-marrow are usually divided into four groups,—the blood-forming cells, the giant cells, the connective tissue cells, and the endothelial cells. The former are divided by Carnegie Dickson into a leucocyte and an hæmoglobin holding series, but a third might be added—the indifferent or indeterminate cells. The latter are those possessing varying or multiple potentialities—being erythropotent under certain stimuli and leucopotent under others.

The red-cell-forming group: These include the normoblasts and the megaloblasts. At some stages of development these come to simulate other lymphoid cells, so that it is important to note carefully the nuclear structure before deciding upon the nature of a given cell. The absolute criterion of normoblastic character is the arrangement of the nuclear matter along the periphery of the nucleus, close to the membrane, with central chromatic spots. The lymphocyte nucleus never shows this structure, but presents a diffuse ill-defined variation in density of chromatin,—trachychromatism. Giemsa preparations fail to show any nucleolus within the normoblast nucleus, whereas it is generally present in the lymphocyte. When the nucleus of the red cell undergoes pycnosis there may be a superficial resemblance to a neutrophile leucocyte whose granules have been lost from degenerative changes.[4] As a rule, the slight greenish or bluish tint of the normoblast cell-body from the presence of more or less hæmoglobin is noticeable. The megaloblast may occasionally be mistaken for a lymphoid cell, but the structure of the nucleus is also characteristic. The lines of chromatin tend to be radial, and the cell-body has a different tint.

The white-cell-forming series: Here we have the non-granular and the granular cells. The latter are characteristic and well-known. The granules are always clearly shown in the triacid preparation, but the characteristic nuclear structure,—rather coarse but ill-defined transverse shadowing,— is best seen in the Panoptic preparations. The granular cells of the marrow are, of course, myelocytes of one kind or another; that is, they have an oval, or reniform, or deeply indented nucleus, as opposed to the polymorphous nucleus of the adult leucocyte. The nuclear structure differentiates these cells from the large mononuclear and transitional cells of Ehrlich.

The non-granular cells are the source of much difficulty; but their due recognition is important for diagnosis. These cells have been crudely divided into small, medium, and large mononuclear forms, but more refinement is necessary because, at best, the classification still in vogue gives only an impressionist picture of the cell-forms.

The modern classification: So far we have referred to ten types of cells, of which seven are blood-cells proper. Careful cytological differentiation, however, provides us with at least thirty-four different forms, exclusive of an enumeration of the degeneration-forms of each variety. It is not proposed to discuss these forms, but the fact is mentioned to indicate the range of possibilities of variation of marrow-pictures in disease. Certain broad remarks are necessary, however. Granular cells may vary as follows: the nucleus may be indented to a varying degree,—the slight dimple indicates an ordinary myelocyte, a deep depression indicates a metamyelocyte, marked polymorphosis indicates the complete polynuclear leucocyte. Commencing acidophilia of the cell-body without definite neutrophilic granules indicates that we have a promyelocyte before us, a cell further back in the line of ontogenetic development. The stage still further back takes us to the non-granular cells. We have the mother cell, the large lymphocyte of older authors, the lymphoidocyte of Pappenheim. Here a small rim of basophile cytoplasm is noted, with a relatively large ovoid nucleus of variable basophili, but characteristic structure and nucleolar content. There may be definite, peripheral, chromatic marking visible in the tissue-sections. It is convenient to call this cell simply "mother cell," which serves the purpose of indicating its place in development and avoids the selection of one of the twenty-three names with which various writers have presented the same innocent cell. Between this cell and the promyelocyte it is possible to interpose a leukoblast stage whose nucleus is myelocytar in structure and whose cytoplasm is more abundant, less basophile, and contains, occasionally, azur granules,—a coarse, abundant granulation with azur dyes. This cell is also called a myeloblast by Naegeli*. The granules vary in size in different cell forms.

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*The two are not absolutely synonymous.

Each of these cell-types includes varieties dependent on changes due to progressive ageing. They also differ during the stage of amitosis. The senile cells, whose body has swollen out at the same time as the nuclear matter shrinks in bulk, are easily recognizable. Some forms undergo pathological polymorphosis of the nucleus producing the cell known as a Rieder cell.

Another form of non-granular cell is the parent cell of the red cells: the lymphoid erythroblast. This cell is diagnosable by noting the commencing wheel-formation within the nucleus. There is no hæmoglobin present.

Summarizing the points relating to the non-granular cells, we have: the ordinary small lymphocyte of the blood-film, its leucocytoid form indicative of senile change; the large lymphocyte, or mother cell, with its leucocytoid form indicative of abnormal senility; the leucoblasts of ordinary size, parent forms, and of smaller size, second or more generation, with or without azur granulation; the promyelocyte of Pappenheim or premyelocyte of Dickson with a senile type,—the smaller indeterminate marrow cells of older writers. At one time such a cell is lymphocytiform, inasmuch as the nucleus is relatively large and the protoplasmic sheath relatively scanty and often hardly visible at all; at another time it is leucocytoid, by which is meant the ageing of the cell by shrinkage of the nucleus and increase in size of the cell-body. These, however, may usually be placed in one or other of the preceding groups. The erythroblasts of lymphoid form which include large, small, young, and old forms. These are differentiated into normoblasts, megaloblasts, and parent cells. Cells with clear cell-body and slightly polymorphous nucleus like the large mononuclear of the blood-stream, now differentiated as a monocyte and simulated by the Rieder pathological form of mother cell.

The degenerative changes which any or all of these cells may undergo are of vast importance to the diagnostician. We have the production of miniature cells from the attempt to rectify a palsy of normal cell production, dwarf myelocytes, dwarf lymphocytes, dwarf polynuclear leucocytes; the production of irritation cells of all kinds,—of lymphocyte-form, of large-lymphocyte-form, of leukoblast-form, and so on. We have also the production of eosinophile cells in which half the granules are mast cell in type. We have the appearance of fatty vacuoles in the cell,—both polynuclears and lymphocytes; we have the appearances of phagocytic cells; we have the appearances of cell-destruction in the form of vague shadows somewhat simulating lymphocytes—met with frequently, by the way, in pus films; we have the presence of marked segmentation of the nucleus of the polynuclear leucocyte "caryorrhectic forms."

In several autopsies on cases whose cause of death was obscure, I have been struck with the fact that the marrow has shown an extraordinary degree of autolytic change. It seemed that if such a change occurred during the last hours of life, a fatal result might be precipitated from sheer liberation of complement or immune bodies in excess of margins of safety, aided to the utmost by entire stoppage of red and white cell-production. Lucibelli[7] found that similar changes in the rabbit bone-marrow are induced by fatal injections of typhoid, colon, and paratyphoid bacilli (loss of staining power of cell, swelling of nucleus, irregular distribution of chromatin, folding of the nuclear membrane, karyolysis.)

VIII. MARROW-PICTURES*. The main types of changes in the marrow in different diseases are best appreciated by the study of photographs. In the absence of such, a few general remarks may be presented. A low power view of normal marrow shows engorged capillary vessels coursing between fat spaces of variable size, in the interstices of which there are clusters of the proper cells of the bone-marrow. The nature of such cells cannot be made out by the low power, save that the nucleated red cells stain more deeply than the others. When examined by the aid of the oil-immersion lens the chief cells seen are the myelocytes; a moderate number of small, round, deeply staining cells, the erythroblasts, is also seen. A succession of fields showing cells in these proportions would indicate a typical combined white and red cell formation.

Erythroblast reaction: In tissue showing an erythroblast reaction the number of normoblasts is relatively much greater, and frequently megaloblasts or even gigantoblasts may be noted. In addition, a number of indeterminate cells of variable size may be detected. Such a reaction is well-marked in cases of septic infection in which there is a good response to the destruction of blood, as well as in anæmias due to any cause which does not paralyze red-cell formation. It is a constant finding in infants' marrow, as first shown by Lossen[8].

Eosinophilic marrow: Here the successive fields in a marrow film present conspicuous numbers of eosinophile cells, easily seen by the bright red colour of the granulation. In the hospital series such a change was met with in severe septicæmias, and in a case of chronic nephritis. It is frequently met with in tuberculous cases, but eosinophiles are absent or very rarely seen in cases of typhoid and diphtheria. In pneumonia they are frequently scanty.

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*This portion of the paper has been abridged.

Lymphadenoid marrow: This form of change is of considerable importance, seeing that it is characteristic of lymphatic leukæmias, some pseudo-leukæmias, Hodgkin's disease, and, in a modified way, of aplastic anæmias. The cells are nearly all non-granular, vary much in size, and belong to the group of "mother cell." A similar phenomenon is also seen in bacterial infections in which there has been exhaustion of the marrow, with resultant leucopenia and lymphocytosis. Red cell formation is also frequently defective, shown by the small proportion of nucleated red cells.

This change according to Oehme,[12] Marfan, Bandouin and Feuillié,[10] Hutinel and Tixier,[5] is very strikingly seen in rickets. It occurs in a focal form, according to the hospital series, in some septicæmias, and in a wide-spread form in typhoid, tuberculosis, and in broncho-pneumonia of infants. Lossen,[9] found the lymphoidocytes very numerous in children. Allied to this type is that met with in cases of Sternberg's leukosarcomatosis, where the tissue is occupied by densely packed round cells of medium size. These cells are entirely pathological in form, though they may be classified under the leukoblast series.

Degenerative marrow: The characteristic of such marrow is the prevalence of cells in various stages of degeneration, already referred to. Phenomena of this type are well-marked in the severe infections,—pneumococcic, streptococcic, and colon infections, gangrenous appendicitis, and typhoid. As already referred to, this change may be carried to the extreme of production of autolysis of the cells with liberation of the ferment granules, and solution of the cell-body. A finding of this kind is of profound significance in relation to the problem of the cause of sudden death during the course of severe toxæmias.

Megakaryocytotic marrow: In this tissue, the megakaryocytes are considerably increased in number. The relation of these cells to the blood vessels is variable. Some authorities aver that they are sessile upon the capillary walls, and dangle their long pseudopodic arms into the blood-stream, so that slight concussions may detach fragments of their limbs and cause them to appear as blood-platelets (Bunting).[1] This view is not accepted by every authority. The important point about these cells, in relation to the pathology of granulomatous formations elsewhere, lies in the appreciation of the heraldic sign of the cell type,—the nucleus,—which presents a loose, basket-like formation.

Megakaryocytes are scanty in cases of tuberculosis, cancer, chronic nephritis, and all bacterial infections. They were found to be very abundant in a case of aneurysm in which leakage had taken place for a considerable time. They are increased in pneumonia, septicæmia, and appendicitis. Degenerative changes in such cells are worthy of note.

Fatty marrow: In this case the fat spaces are not only increased in number, but the interstitial specific tissue is much diminished in amount. This is a physiological change in old age. In infections where the marrow tissue has been exhausted, the fatty tissue becomes preponderant as a compensatory change.

Fibroid marrow: The replacement of both fatty and formative tissue by a spindle-celled tissue, in which lie collections of small, round, inflammatory cells, occurs during the course of chronic inflammatory processes in the long bones. The marrow tissue proper is here replaced by the new cells. Such a change may be focal or diffuse, just as tuberculous or septic or luetic inflammations of bones may be focal or diffuse. If focal, areas of marrow tissue would alternate with the fibroid portions.

Gelatinous degeneration: The fat spaces are normal in number but the interstitial tissue between them is changed, having lost many of the specific cells and acquired a hyaline appearance. Gelatinous degeneration may be focal or diffuse, and may be associated with atrophy of the cancellous bone or may occur as an almost imperceptible change amongst the fine-meshed trabeculæ of a rather ossified marrow cavity. It may or may not be associated with disseminated foci of formative or fatty marrow. This form is not identifiable in film preparations. It occurs in diseases associated with starvation-prolonged diarrhœa, carcinoma, or prolonged cases of suppuration.

IX. Many of the types of marrow change above referred to are the classical types. It may be noted, however, that it would be more correct to divide up the marrow changes into such groups as erythrotoxic, leucotoxic, myelophthisic, myeloplastic, erythroplastic, erythrodegenerative, leukodegenerative, and so on.

It has been found convenient to represent differential marrow counts in the form of charts, using squared paper on which each square starting from a base line represents a ten per cent. increment, passing from left to right. In the absence of figures, it would be confusing to explain this method of graphic representation in detail.

The correlation of marrow findings with the tissue-changes occurring at the same time in the lymph-nodes and spleen forms too wide a subject for consideration in the present communication. The remarks which have been made will suffice to show some of the directions in which the study, even of the marrow alone, may be instructive to the clinician and clinical pathologists.

The observations made on the autopsy series at the Royal Victoria Hospital would go to show that our conceptions of the daily changes occurring in these hæmatopoietic tissues are remarkably incomplete, and demand very careful attention.

The problem of diagnosis from observations of the living marrow is a difficult one, and whether the results to be so obtained are of sufficient value or not remains to be seen. It is, however, likely that in certain cases the clinician would receive definite help, before pronouncing an anæmia to be definitely incurable or not. The value of this study in connexion with the elucidation of obscure autopsy cases has been sufficiently demonstrated on a number of occasions.

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We learn from the *Globe* that the St. John Medical Society has published a tariff of fees. The publication, which bears the date 1912, states that the charges are not necessarily maximum or minimum, but average fees. Some of the fees quoted are considerably higher than those published in 1899. The practitioner is entitled to charge from two to three dollars a visit instead of from one to two dollars. The fee for the amputation of fingers or toes is to be from ten to twenty dollars, instead of five; and for resection of shoulder, wrist, ankle, etc., the fee is to be from one hundred to one hundred and fifty dollars, instead of from fifty to one hundred dollars.

PRESIDENTIAL ADDRESS

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[Abstract]

WHEN it was first suggested that this association should become a branch of the Dominion Medical Association, many of us feared that in this way we might lose our identity. As the scheme has eventually materialized, however, I think it a distinct advantage to the Ontario Medical Association. Whilst we have retained our autonomy, and are thriving and prosperous, we are at the same time —I think I may say without boasting—the most important branch of the Dominion Association, and can feel that our interest is not merely provincial, but that we have a larger and wider outlook through our connexion with the national association.

I think it very desirable that there should be an increase in the number of small county medical societies, and I should like to suggest that for this purpose the province be divided into ten districts, corresponding to the ten health districts recently established by the provisions of the new health bill. As there are forty-seven counties in the province, this would mean that each society would include four or five counties, which appears to me to be a practical arrangement. Then the method of securing membership in the Ontario Medical Association would be simplified by accepting the members of these smaller societies, which would obviously be in a better position to determine their qualifications.

When the Ontario Medical Council was first established there were three licensing boards in Canada, in addition to the medical schools and universities; namely, the Upper Canada, the Homœopathic, and the Eclectic Medical Boards. The universities, in addition to conferring degrees, really possessed licensing power, inasmuch as the holder of a university degree was entitled to practise medicine on proving his identity and paying a small fee. The

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provincial license enabled the holder of it to practise in the province conferring it, or in fact in any other province, so that as a matter of fact there were in Upper and Lower Canada, exclusive of the other provinces now constituting the Dominion, seven or eight licensing boards responsible to no central authority. On the establishment of the Ontario Medical Council it became the central authority and the only licensing body.

Before this time the schools and universities fixed their curricula, both for matriculation and professional examination; some of the licensing boards required no standard of matriculation at all, and the professional acquirements necessary to become a practitioner of medicine were of a very inferior character.

The first step taken to remedy this state of things was the "Parker Act," passed in 1865, providing for the formation of a council with power to fix the standard of matriculation and that of the medical curriculum, but giving it no power to enforce this standard. The Homœopathic and Eclectic Boards were not interfered with, and the provisions of the Act were found to be very defective. An arrangement was then made with the homœopaths and eclectics and the various schools and universities, whereby the whole of the profession became subject to the Medical Council of Ontario, as a central authority. This council was made up of representatives, elected from and appointed by the general profession, the medical schools and universities, and also from the homœopathic and eclectic bodies. This Act came into force in 1868, and conferred upon the council power to fix the standard of all examinations and appoint examiners to conduct them.

Prior to 1867 the matriculation examination of our colleges was simply a matter of form, and could be passed at any time before going up for the degree. Now it is equivalent to a second class teacher's certificate with compulsory Latin and physics and the science course. I believe that at the present time all the colleges and universities in the Dominion require four years of study before a student goes up for his degree, and in McGill University and the University of Toronto five years are required.

The president of the University of Toronto, in his last published report, suggests that the entrance standard for medicine in the University of Toronto shall be senior matriculation, which really amounts to the first year at the university, and I may say that recently the medical faculty has recommended to the Senate than an examination equivalent to that of senior matriculation shall be demanded of all students entering the medical faculty of the University of Toronto in future.

Last year the Ontario Medical Council very wisely decided to discontinue its primary and intermediate examinations, accepting the primary and intermediate examinations of the universities, and only requiring a final examination in medicine, surgery and obstetrics. As soon as the Dominion Medical Council comes into operation, it would seem unnecessary for the Ontario Medical Council to hold even the final examination, as a student would naturally prefer to take the examinations of the Dominion Medical Council, which would entitle him to practise in any part of the Dominion. This takes away one of the functions of the Ontario Medical Council, and while it may have other duties to perform of a sufficiently important character to justify its existence, I think there is a general feeling that its numbers might, with advantage, be greatly reduced.

The number of homœopathic representatives is altogether out of proportion. Through the courtesy of the registrar, Dr. Bray, I have learned that there are forty-eight homœopaths practising in the province, and three thousand two hundred and eighty regular practitioners. These forty-eight homœopaths have five representatives on the council, that is to say one to about every nine and a half. The three thousand two hundred and eighty regular practitioners have eighteen representatives, and if we add to these the six representatives from the colleges, making twenty-four altogether, we may say that they have one to every one hundred and thirty-six. Amongst the members elected from the colleges we find that there is a representative for Victoria University, for Trinity University, and for Ottawa University, none of which have medical faculties, and I can see no reason whatever why they should continue to have representatives on the council.

I would suggest that the Ontario Medical Council consist of ten members, one to be elected by the homœopathic physicians, and three to be elected by the universities having medical faculties, leaving six to be elected by the general profession. Even this gives the homœopaths a predominance in the council quite unjustified by their numbers, and with the diminished amount of work required from the Ontario Medical Council this should be a sufficiently large body.

MEDICAL EDUCATION. The question of medical education is at the present time receiving a considerable amount of attention, and both the teaching and practice of medicine are passing through a period of evolution. In the United States medical education has been a subject of discussion for a number of years, and committees have been appointed by various societies, more especially the Association of American Medical Colleges, in conjunction with the Confederation of Examining Boards of the United States and the Council of Medical Education of the American Medical Association, to enquire into the equipment, entrance requirements, and curricula of the medical schools.

In 1905 the Carnegie Foundation was established by Mr. Andrew Carnegie to investigate the subject of university education in general, and a special committee was appointed to consider medical education in the United States and Canada. The report of this committee and the recommendations of the council on medical education of the American Medical Association show that the most urgent indications are reduction in the number of medical schools, elevation and uniformity of entrance requirements, maintenance of well equipped laboratories with capable teachers, and clinical training in a hospital in intimate relationship with the medical faculty; that is to say, in a properly constituted teaching body, there should be a hospital under the direct control of that body. The report of the Carnegie Committee also emphasizes the fact that the medical profession, both in the United States and Canada, is at present over-crowded by poorly trained physicians and surgeons.

At the meeting of the council on medical education, held at Chicago on February 29th of this year, the secretary reported that whereas in 1906 there were one hundred and seventy medical schools in the United States, constituting half the total number existing in the world, the number had now been reduced to one hundred and twenty. This reduction is due to the closing of some badly conducted and imperfectly equipped schools and the amalgamation of others.

As regards entrance requirements, Dr. Colwell stated at the above meeting that forty-seven of the one hundred and twenty remaining medical colleges now require that a year or more should have been devoted to physics, chemistry, and biology, together with a four-year high school course. Twenty-nine colleges require a minimum of two or more years' work in a college of liberal arts, with a four-year high school course. Nine state examining boards have adopted preliminary requirements in excess of a four-year high school education. Of the one hundred and twenty colleges, seventy-nine are connected with liberal arts colleges or universities, but of these, thirty-three only are in intimate relationship with universities. During the last seven years the college terms have been lengthened, new methods of teaching adopted, more salaried teachers employed, more endowments secured, new buildings erected, better laboratories and laboratory equipment, and better clinical facilities provided. Several of the larger medical schools have been reorganized, have built teaching hospitals and adopted higher standards of education, and the teaching of medicine has now been placed, to a great extent, on a university basis throughout the United States.

As regards Europe, in London there is more clinical material available than in any other city in the world, and the conditions for teaching are most favourable, and in my opinion there is no place at which one can get a better training in the fundamental principles underlying the practice of medicine. This, together with the exceptional clinical facilities, makes London the greatest medical centre in the world. In the University of Berlin no senior professor practises medicine. The universities, which are maintained by the State, pay salaries to the professors, surgeons, and physicians, and also all expenses connected with the laboratories.

I am of opinion that, as education is a matter within the jurisdiction of the provinces of this Dominion, it is the imperative duty of the provincial governments to see that a certain definite standard of medical education is maintained, the individual medical colleges retaining their charters only if they continue to provide this standard. It will be their duty to see that these colleges are provided with proper laboratory accommodation and facilities, and—what is perhaps equally or more important—a sufficiency of clinical material in hospitals connected with or under the control of the college.

Medical education attains its maximum efficiency only when it is based upon a good system of general education, and is supported by the scientific and literary atmosphere of a university. Three of the greatest advances in modern medicine are due to laboratory work, namely, the work of Faraday in physics, of the Curies in chemistry, and of Pasteur in biology. Sir William Osler thinks it advisable that this type of university work should be extended into our medical schools, and that we need "an active invasion of the hospitals by the universities." In the city of Toronto we now have what may be described as "an active invasion of the hospital by the unversity," in that the University of Toronto now has control of the Toronto General Hospital, thus making the latter, to all intents and purposes, the university hospital. We have here what is generally recognized as the essential thing in the training of medical students, namely, the intimate connexion with and active control of the hospital by the university. When our new arrangements are in working order we hope to be able to give our students a great deal of clinical work in the hospital, so that they may thus have an opportunity of acquiring that familiarity with disease processes in the living subject which is so essential as a qualification for their life's work.

Medical education in Canada has always been up to a high standard. But in this connexion it should be borne in mind that, owing to the development of the preliminary sciences, such as physiology, pathology, and biology, the work of the student has practically doubled in amount, and is continually increasing. In view of this increased demand on the time of the student, a five-year course in medicine has now been adopted in all the leading Canadian medical schools, the final two years being devoted to practical work.

All writers on medical education emphasize the paramount importance of thorough training in practical work, with opportunities for the students to come into actual contact with patients. The efficiency of the practitioner, the welfare of the public generally, and the adequacy of the public health service, are all dependent upon the quality of the training given in the medical schools, and the ideal at which we are aiming is uniformity in the requirements and standards exacted by all the examining boards throughout the country. We trust that this happy result will follow the adoption of the "Canada Medical Act," establishing interprovincial registration, and a license which will enable the holder of it to practise in any part of the Dominion.

THE "CANADA MEDICAL ACT." The "Canada Medical Act," which has for its object the establishment of a uniform standard of examinations and qualifications throughout the Dominion of Canada, was introduced in the Senate by Dr. Roddick in 1902. It was passed, but it was found impossible to bring the Act into operation at that time, owing to the fact that opposition was made by some of the provinces on the ground that their interests had not been sufficiently considered.

Owing to Dr. Roddick's perseverance and devotion to the work in connection with this Bill, and that of a few others who coöperated with him, he succeeded in convincing the various provinces that it was to their interest to pass this Bill, and consequently an amended Bill was passed in the 1911 session of the Dominion Parliament. I wish here to express my sense of the debt of gratitude which we owe to Dr. Thomas G. Roddick for the unprecedented services which he has rendered to the entire medical profession of Canada.

This amended Bill only became operative when a so-called "Enabling Clause" had been passed by every province. All the provinces have now passed this "Enabling Clause," Ontario being the last to do so. This means that now the "Canada Medical Act" is in operation, and it only remains for the Dominion Medical Council to be established in accordance with the terms of the Bill, which are briefly: That the council shall consist of (*a*) three members, appointed by the Governor-General in Council, each residing in a different province; (*b*) Two members representing each of the nine provinces, to be elected by the provincial medical council; (*c*) One member from each university or medical college, which has power to confer degrees in medicine; and (*d*) Three members elected by the homœopathic physicians in Canada.

OSTEOPATHY. The Bill which was recently introduced by Dr. Jamieson, and which was withdrawn at the last session, contained a clause defining medicine, which it is to be hoped will be incorporated in a Bill which will probably be passed at the next session of the legislature. It is a great pity, as we all know, that this was not defined by the legislature many years ago, when the council was established in 1867, and it is desirable that the profession should be thoroughly conversant with the terms of this Bill.

The Bill provides for the registration of any person who has matriculated in accordance with the requirements of the College of Physicians and Surgeons of Ontario, and holds a diploma granted by a school or college of osteopathy recognized by the American Osteopathic Association, and has attended such osteopathic school or college for the time specified in the Bill. It also provides for the registration of persons who have been practising osteopathy in Ontario prior to the passing of the Bill, provided they hold such diplomas. It also provides that any person shall be held to practise medicine within the meaning of the Act who shall by advertisement, sign, or statement of any kind, allege ability or willingness to treat diseases, or to prescribe or administer medicines or treatment of any kind for diseases, defects, deformities, or injuries, but specifies that this section does not apply to the practice of dentistry, pharmacy, the usual business of opticians, vendors of dental or surgical instruments, apparatus and appliances, nurses, chiropodists, bath attendants or proprietors. Every person registered under this Act as a practitioner of osteopathy in the province of Ontario shall be entitled to recover fees for professional attendance.

This amendment to the "Ontario Medical Act," which permits of the registration of osteopaths, is not such a monstrous thing as it seemed at first. I take the view that a man is justified in practising any pathy he wishes, provided he has obtained a sufficient knowledge of the anatomy of the human body, its physiology, and the disease processes to which it is liable. It will be obvious to every sane man that such a knowledge is absolutely essential; for how can any one attempt to treat a disease without understanding the nature of the disease in question or normal conditions?

At the present time the public is at the mercy of a large number of uneducated charlatans, whose work is not only of no value in any real disease, but is often of a highly dangerous character. We have all met with cases in which this lack of knowledge has resulted disastrously to the unfortunate patient.

If, as is proposed in the Bill, those wishing to practise osteopathy must pass an entrance examination equal to that of any practitioner of medicine, and in addition pass a primary and final examination, which would include all the essential subjects, substituting their pathy for medicine, we should have no objection to their being licensed by the Ontario Medical Council. In this way the public would be protected by requiring of osteopaths a sufficient knowledge of these fundamental subjects, which is absolutely essential before attempting to treat the sick. If, after they have passed these examinations, they still think there is any value in their particular pathy, we have no objection to their practising. I would take a similar attitude towards any other pathy.

When the Ontario Medical Council was organized the homœopaths and eclectics were taken in and the same examinations prescribed for them as for regular practitioners. What has been the result? The eclectics have practically ceased to exist. Very few homœopaths have been taking the examinations, as is shown by the fact that at the present time only forty-eight are practising in the province of Ontario, but unfortunately I am unable to ascertain how many there were at the time of the formation of the Ontario Medical Council.

The only objection I have to the Bill is that it proposes to take in a number of graduates of certain American colleges without passing any further examinations. I think that a clause should be added requiring all these men to pass an examination before being registered, and although we may, for the time being, have to accept qualifications which are decidedly less than those which will be exacted from future candidates, we shall certainly have made a material advance in securing for the public very valuable protective legislation.

In support of the contention that those who are practising osteopathy at the present time should pass an examination, I should like to briefly refer to the Carnegie Report. Amongst medical sectarians the committee includes homœopaths, eclectics, and osteopaths, all of whom admit in theory that medical education should be based upon the fundamental sciences of anatomy, physiology, pathology, and bacteriology. It is stated that the catalogues of the eight osteopathic schools in the United States are a "mass of hysterical exaggerations, and fairly reek with commercialism." Entrance standards are conspicuous by their absence. In the catalogue of the parent school at Kirksville it is stated that an applicant will be accepted if "he pass examinations in English, arithmetic, history, and geography," but he may be admitted even if he fails to do this. The Cambridge school (Massachusttes) states that "a diploma may be accepted or an examination required if deemed advisable by the directors."

Whatever his opinions may be on the subject of treatment it is essential that the osteopath should be trained to recognize and to differentiate between the diseases he professes to treat, and not one of these osteopathic schools is in a position to give the training in physiology, pathology, chemistry, and bacteriology which "osteopathy itself demands." In none of them is there any effort to connect the "laboratory teaching with clinical osteopathy," and in none is there "anything approaching the requisite clinical opportunities."

In the eight osteopathic schools there are now over thirteen hundred students, paying about $200,000 annually in fees, and for this they "receive an education which is practically worthless."

All candidates who intend to practise surgery—whether osteopaths or not—should be required to pass a uniform examination in this branch of treatment. It is absolutely essential that all who undertake the treatment of disease, irrespective of the form of treatment they propose to adopt, shall be educated in such a manner as to render them capable of distinguishing between the various diseases which may come under their observation.

PUBLIC HEALTH. The rapid development of bacteriology, and the establishment of the germ theory of infective diseases, due mainly to the scientific investigations of Koch and Pasteur, have led to corresponding development in practical and preventive medicine. Recognizing the importance of this development in relation to public health, Senator Owen, of Oklahoma, introduced a Bill in Congress about two years ago to provide for the creation of a Federal Department of Public Health, which was strongly supported by the American Medical Association and various other medical societies in the United States.

The object of this Bill was defined to be "all matters pertaining to the conservation and improvement of public health, and to collect and disseminate information relating thereto." It also provided that the new Department of Public Health should include: 1) The Public Health and Marine Hospital Service; (2) Foods and drugs, from the Bureau of Chemistry, which is now in the Department of Agriculture; (3) Vital Statistics, now in the Department of Commerce and Labour.

An amended draft of the Owen Bill has recently been brought before the Senate, which differs from the original Owen Bill, in that it provides for an independent health service, at the head of which will be a director appointed by the president, but who is not to have a seat in the cabinet, whereas the original Owen Bill specified that the head of the department should be a physician, who would also be a member of the president's cabinet. The amended Bill provides for the appointment by the president, with the approval of the Senate, of three commissioners of health, to act as assistants to the director, two of whom shall be skilled sanitarians and one a skilled physician.

On March 22nd, of the present year, Senator Smoot brought a Bill before the Senate, which contains practically the same provisions as regards the federal government, but varies essentially from the Owen Bill, in that it arranges for the public health service to be under the control of the secretary to the treasury, and to be managed by an assistant secretary, who shall devote the whole of his time to public health work, thus ensuring representation in the cabinet. The Medical Bureau, including the present Public Health and Marine Hospital Service, is made the predominating bureau, and it is proposed to transfer vital statistics to this department.

I have referred to this contemplated legislation in the United States in order to show what is being done elsewhere in regard to public health matters. Many of us have felt for years that a Federal Department of Public Health should be created, with a responsible minister at its head, and representations were made to the late government by the Canadian Medical Association along these lines, but no action was taken.

I intend proposing a resolution to this effect during the course of the meeting, urging the Dominion government to give this matter early and favourable consideration.

Early in the present year the Academy of Medicine, New York, appointed a committee on public health, hospitals, and budget, for the purpose of investigating existing conditions, and to give expert medical opinion upon various matters, including provision for contagious diseases, school sanitation and the use of public funds in the maintenance of public health, one of the most important being the consideration of the health of school children. The committee is not to interfere in political matters, but to endeavour to give advice as will be serviceable to the community as a whole. This will include attempts to educate the laity to minimize conditions which tend to the spread of occupational diseases, and to educate general practitioners in matters relating to municipal health, sanitation, and hygiene. We might with advantage follow their example.

DIVISION OF FEES. Considerable attention has recently been directed, more especially by the various medical and surgical societies throughout the United States of America, to the prevalent practice of fee splitting, or the division of fees between consulting surgeons and physicians, or physicians and consulting physicians.

Judging from the papers which have recently been published, and the reports of the committee which have been appointed to enquire into the subject, this reprehensible practice appears to have become exceedingly common. It is increasing to an alarming extent amongst the younger members of the profession, and has even been adopted in some cases by men of good standing, owing to the fact that it suits their convenience and that they find it profitable.

The division of the fee is accomplished by various methods, and is based on commercialism alone. It means nothing more or less than the payment by the consultant of a commission to the general practitioner, with the object of encouraging the latter to continue to send patients where he is most likely to receive a share of the money paid for relief or attempted relief, irrespective of the skill and experience of the consulting surgeon or physician in question. The practice is even more common amongst surgeons than physicians, and is carried on without the knowledge of the patient, who is ignorant that a portion of the money, amounting, according to the report of the committee of the Erie County Medical Society, to from twenty-five to fifty per cent., goes to the general practitioner who has recommended the surgeon.

There can be no question that it is a pernicious system, fundamentally opposed to the ethical traditions of the profession, and that it cannot be advocated by any honourable man. It represents a form of collusion betweeen the consultant and the general practitioner, which is compromising and demoralizing to both parties, in that it is invariably practised without the knowledge of the patient, and is at the same time disadvantageous to the latter.

As regards the causes responsible for the prevalence of this evil, it is stated in the report referred to above that the committee was practically unanimous in the opinion that the principal predisposing factors in commercialism are the over-crowding of the medical profession, a low standard of medical education, and a lack of appreciation of professional ethics. The committee also includes amongst the contributory causes, contract practice and its inadequate remuneration, and the fact that the general practitioner is often under-paid. This state of things should be rectified in a legitimate manner, by educating the public to understand that, in view of the advances in medicine and surgery, and the consequent increase in responsibility and work necessitated by modern methods of diagnosis, the general practitioner is justified in demanding a larger fee in such cases. He frequently has to take his patient to a consulting physician or surgeon, and if an operation has to be performed he has to be present. It goes without saying that he should receive adequate compensation for such services, and it is unreasonable to expect him to spend his time in this way without remuneration. In spite of the increased cost of living, and the advances in medical and surgical science, the family practitioner is still receiving the same compensation as his predecessors of two or three generations ago. If the public will compensate the family physician fairly and promptly for his services, and insist that all transactions between the physician and the consultant be carried on with the full knowledge of the patient, the cause and the possibility of this evil will speedily disappear.

The committee also points out that the prospect of receiving a commission sometimes results in exaggeration of the necessity for operation, and thus leads to indiscriminate, reckless, and useless surgery, performed in some instances by inefficiently trained and inexperienced surgeons. Although the general practitioner is assumed to recommend his patients to consult a competent surgeon, the possibility of receiving fifty per cent. of the fee may interfere with his discrimination.

It was suggested at the meeting of the board of regents of the University of New York, held on April 19th, 1911, that the legislature be requested to consider the advisability of prohibiting the consulting physician or surgeon from paying fees to another practitioner without making known the fact of such payment to the patient or the relative or friend acting on his behalf; and also that it might be advisable for the board of regents to announce that it will revoke the licenses of physicians or surgeons determined to have been guilty of this practice.

Dr. A. S. Draper is of opinion that correction of the evil must come from within the profession itself by means of the local organizations, and that if this is not done the public will probably take the matter into its own hands with painful results.

The Academy of Medicine, Toronto, appointed a committee to consider this question, and the following resolutions were passed at the annual meeting on May 7th of this year:

1. "That the payment of a commission to any person or persons who may be instrumental in influencing a patient or patients to apply for professional advice is wrong in principle, and detrimental to the best interests of our profession."

2. "That when two or more practitioners are engaged in a case, the disposition of the respective fees shall only be made with the knowledge and consent of the patient."

3. "That we agree that the attending physician has often been inadequately paid for his services."

I would suggest that this matter be dealt with by this association at the present meeting, and that a similar action be taken to that of the Toronto Academy of Medicine.

Case Reports

ANOMALY OF THE VAGINA AND UTERUS

THE following case seems unique according to the literature convenient to my hand, and in the presentation of it I venture a query. Mrs. R., aged twenty-seven, a Canadian of good family, married a year and eight months, called me in the early morning of May 18th, for hæmorrhage and pains in the back and pelvic region.

Her history is of the very best. She never was seriously ill in her life except with typhoid fever at ten years of age. She has, however, at times had slight stomach attacks with palpitation, but she is essentially of a high-strung and nervous disposition. There is no history of any deformity or malformation in either her father's or mother's family. Her menstrual periods have always been irregular from the beginning, varying from four to six weeks, and have been accompanied by more than the usual pain and discomfort.

The last menstrual period began February 26th last, so that, apparently, pregnancy was advanced somewhat over two months. There was experienced during this period the usual nausea, but otherwise she "never felt better in her life."

On Tuesday afternoon, May 16th, while out of doors she felt a slight hæmorrhage. No more was experienced until next morning, when slight hæmorrhage began again and continued all day and all night with two attacks of colicky pain. When I was called, the hæmorrhage was marked but not profuse. Everything pointed to a miscarriage, but on attempting examination per vaginam, found the excessive nervousness a bar to any certainty of diagnosis. However, as the hæmorrhage increased during the next three hours, I called Dr. A. Wolverton Mair as anæsthetist and prepared to remove the products of conception in the usual way.

On introducing one finger I found the products of conception in a sack which seemed to be a small uterus, but whose cervix seemed too largely dilated and strangely near the vulva. These products contained no fœtus, but a mass of what seemed membranes and placental tissue. I could get no history of anything having been lost. The strangeness of the feeling of the parts led me to examine more carefully visually and manually, when I discovered the following condition.

There was a ring of tough tissue at the opening of the vagina, which was in the usual situation. This vagina was nothing but a cul-de-sac and about the usual length. In the left-hand side of the ring was the small opening into the second vagina, and it was in this left vagina that the products of conception were found. This vagina was shorter than the other and led to a well-formed uterus whose cervix was small and had no semblance of any dilatation and whose length appeared to be the usual two and half inches. To the right of this uterus there was a tumour, which appeared to be the other half of a double uterus, but having no connexion with the right vagina, and whether it has any connexion with the left uterus, by opening into it, I cannot say. Dr. Mair examined with me and he agrees that no products of conception had ever been in the left uterus. The recovery of the patient was speedy and uneventful.

The pertinent query to me is this,—could conception have taken place in the left vagina apart altogether from the uterus, or could this vagina have in any way partaken of the character of a uterus as well as a vagina, and why did products of conception remain as long as they did without aborting?

Fort William OSWALD C. J. WITHROW

AT a meeting of the Halifax Board of Health, which took place May 30th, the question of the admittance to the hospital for infectious diseases of patients from the military and marine and fisheries departments was again discussed. Surgeon Colonel Foster considered that in an emergency the military authorities could look after the women and children suffering from contagious diseases, but that the rank and file should be permitted to enter the hospital. It was decided to extend to the military department the privileges which they had formerly enjoyed, and that thirty days' notice of the termination of the agreement should be given in case of men, and twenty-four hours in the case of women and children. Mr. Harvey asked that the former arrangements might be continued with the marine department; he stated that there had only been three cases of infectious disease in fifteen months. The marine agreement was left unchanged.

Editorial

AN UNFORTUNATE INCIDENT

FROM time to time adverse criticisms have been heard regrading the National Sanitarium Association at Muskoka and the mode of its conduct; but "charity covers a multitude of sins," and realizing that the sanatorium at Muskoka is the pioneer institution of its kind in Canada, and that it has undoubtedly done much, both directly and indirectly, to stimulate an interest in the care and cure of early cases of tuberculosis, we have been willing to believe that a fuller knowledge would show the criticisms to be unjust. At most, being convinced that tuberculous patients are best treated in their home neighbourhood, and that it is impossible for those of moderate means to travel hundreds, not to say thousands, of miles to the "Kurort," we have objected to an institution taking to itself the name of "National" when its function can only be provincial, and to that institution seeking and obtaining funds in other provinces, and so diverting funds from local institutions of the same order. Such conduct, however, may be regarded as human, and it may be urged in extenuation that pioneers in a great movement, as enthusiasts, are apt to have large views regarding the scope of their work.

But there has occurred, within the last few weeks, an incident which must cause the Muskoka institution to be criticized by all other right-thinking medical men, an incident which shows luridly that those in control at the Muskoka sanatorium, regard their medical coadjutors not as fellow-workers in a great cause, but as servile instruments necessary, it may be, for the commercial success of the undertaking, but otherwise unworthy of consideration.

Dr. Alfred H. Caulfeild, a most capable graduate of Toronto University, had entered with enthusiasm into the study of tuberculosis, combining exact clinical with pathological research. His investigations were first conducted at Muskoka, and later, as the work developed, he studied in Germany, obtaining results of first importance which were communicated to the Royal Society; other papers have been published on these pages, in the *Archives of Internal Medicine*, and the *Journal of Medical Research*. As a result of his admirable studies, on his return to this country he was asked to assume, and he assumed, the directorship of the pathological department of the National Sanitarium Association, a post which, if we mistake not, was created for him. As a man of high standing, he objected, and objected rightly, to his work being extensively advertised in the lay press in a manner which was not ethical. As, contrary to his wishes, this advertising continued, there was no alternative but resignation, and accordingly, following the terms of his contract, he gave six months' notice. The answer to this notification on his part was an immediate termination of the engagement: an official of the board went to the laboratory, dismissed Dr. Caulfeild's assistant, closed the laboratory, and ordered the laboratory servant to leave the grounds that very day. Dr. Caulfeild went to Toronto forthwith to register a formal objection. On his return to Muskoka he found that all his work had been destroyed: his cultures, many of which he had been studying for long years, had been killed by the application of bichloride of mercury; and his extracts, toxins, and anti-serums were irretrievably ruined by the same procedure.

For so barbarous an outrage there is no conceivable excuse. At the meeting of the Ontario Medical Association held in Toronto during the last week in May, the following resolution was passed; it was moved by Dr. McPhedran and seconded by Prof. Leathes: "Resolved that this Association, representing the profession of Ontario, desires to place on record its emphatic condemnation of the destruction of the cultures, extracts, and other biological products, representing many months' work of the physician in charge of the department of scientific investigation in the National Sanitarium Association."

We can only repeat that an institution whose directors act in the manner above indicated cannot possibly receive the sympathy and support of the profession, or of other humane and charitably disposed persons.

AMERICAN SURGICAL ASSOCIATION

FOR the first time in its history, the American Surgical Association held its meeting outside of the United States. It is perhaps not unreasonable to think that in making Montreal their place of meeting for the year 1912, they desired to pay a compliment to the few Canadian members of the Association, and it may safely be said that the compliment has been greatly appreciated.

For many years the work of the American Surgical Association has entitled it to rank with the great surgical societies of Germany and of France. The quality of work at the recent session served, putting it briefly, to maintain its high reputation The character of the papers upon bone and joint surgery, was outstanding in quality. It may be unwise to single out any contributor in particular, but the writer cannot refrain from expressing a feeling of great admiration for the paper of John B. Murphy of Chicago; and this was very clearly the feeling of all the members present. It has been remarked that the surgery of bones and joints, which thirty years ago constituted the great bulk of both practical and scientific surgery, and which since in comparison with abdominal work has suffered somewhat from neglect, is now coming into its own again. This saying finds its proof in the kind and quality of the contributions to the recent meeting.

It is unnecessary to refer in further detail to the various items on the programme, but one may reasonably call the attention of Canadians to the paper of Dr. Alexander Primrose, of Toronto, who happened to be the only one of the four Canadian members to find a place on the programme. Dr. Primrose read an extremely interesting paper on "Hæmorrhage into the peritoneal cavity caused by accidental rupture of the ovary." His observations excited considerable interest and provoked discussion. He drew particular attention to the fact that the rupture of a graafian follicle during menstruation might be a source of very considerable hæmorrhage into the peritoneal cavity, and might simulate the signs of acute appendicitis, or else be a coincidence with an attack of acute appendicitis.

Dr. Armstrong, of Montreal, took part in the discussion on the method of anæsthesia by intratracheal insufflation and contributed a valuable series of observations on about fifty cases.

The weather was, unfortunately, bad throughout the meetting, but the visitors appeared to enjoy their stay in Montreal.

DR. BRUCE'S ADDRESS

WE take the liberty of saying that the presidential address which was delivered by Dr. Bruce before the Ontario Medical Association, was the most masterly which has been given before any association for a long time. After a graceful introduction, in which the clinical nature of the meeting is referred to and mention made of the untimely death of James F. W. Ross and James Bell, the president gave what was in reality a political history of the profession of medicine in Ontario, with due reference to Dominion affairs as well. Another important section was that which dealt with medical education and the licensing of practitioners whose methods leave them outside the regular ranks. It is these portions of the address which we have selected for publication, although this by no means implies that we are insensible to the merit of the remainder. The conclusion was an admirable survey of the progress of medicine for the year in all its departments, and, so we are informed, will be duly published in the various excellent journals which are issued in Toronto.

ASSOCIATION MEETING, EDMONTON

THE occasions on which the meetings of the Association have been held in the West are so few that more than usual interest is being taken in this year's annual session, particularly as the meeting-point is in the rising city of Edmonton. The facilities for going west are each year becoming easier; nevertheless, a large number of members have yet to make their first trip to the district west of Winnipeg. The prairies and the plains at the season of the year when the meeting is held will demonstrate to the visitors the wonderful resources of Canada, and the reason why the eyes of the world are now centred on our western country. It will show to the profession the great opportunities there are in these western lands, where many new towns are each year being built. Members can also embrace the opportunity, being so close to the Rocky Mountains, of visiting the points of beauty that are so famous the world over.

The arrangements with the railway companies are: that members attending the convention,—and this will include their wives,—will get single fare for the return journey, providing there is an attendance of one hundred from all over Canada. That number will be easily obtained, so that no more favourable opportunity for an outing can be offered the profession, one combining business, a holiday, and a pleasure trip. The single-fare rate is being made by the direct route to Winnipeg and Edmonton; or the delegates can travel by the lake route, landing at Fort William, thence by rail, at a slightly additional figure to cover the cost of the meals and berth furnished on the steamer; or the members may go or return via Chicago. Beyond Winnipeg the route is by the direct line to Edmonton, or via Calgary, or the traveller can go one way and return the other.

Each member when starting on the journey must take a receipt from the ticket agent for the fare paid, which receipt will be filled in and signed by the secretary of the Association, at Edmonton, and on surrender of it to the railway company there, a ticket to return to starting-point will be furnished, without charge.

At Calgary and Edmonton there are cheap return rates to Banff, Lake Louise, Field, and Glacier, so that those who are not inclined to take the trip to the Pacific coast can, nevertheless, visit these places in the Rockies.

Those who desire to make a prolonged holiday, and to vary the trip, are recommended to take advantage of the summer-tourist-rate tickets now being sold by the railway companies. The following table will give the members some idea of what these trips and rates are.

	Edmonton single fare	Vancouver Victoria Seattle Portland	Portland	San Francisco Los Angeles
		Going C.P.R. and returning via Kootenay and Crows Nest route or via Chicago	Going C.P.R., returning via O.W.R. and N. Co., Spokane and Crows Nest route, or via Chicago	Going C.P.R. returning Salt Lake and Denver or Santé Fé route, (for Grand Canon) and Chicago
Halifax	$72.50	$135.70	$135.70	$150.70
St. John	67.50	127.20	127.20	142.20
Quebec	63.05	114.10	114.10	129.10
Montreal	59.05	106.75	106.75	121.75
Ottawa	55.65	104.85	104.85	119.85
Kingston	54.00	102.05	102.05	117.05
Toronto	49.10	93.85	93.85	108.85
London	49.10	93.85	93.85	108.85
Hamilton	49.10	93.85	93.85	108.85
Port Arthur	36.50	66.25	66.25	72.50 (returning direct
Winnipeg	23.80	66.25	66.25	72.50 to Chicago only.)

All the members, except those who desire to prolong their journey to the coast and come back by the States, are urged to buy their tickets on the convention certificate plan, being careful to take a receipt from the ticket agent for the fare paid. Those who perhaps have only a short distance to go, and who may think it unnecessary, in view of the small expense, to take their tickets on this plan, must remember that it is still very necessary to do so, in order that the total number of convention certificates may certainly reach the required number of one hundred.

Certain details concerning the expense of side trips to the Yellow Stone Park, of the Grand Canyon of Arizona, were printed in the June number of the JOURNAL, and members who contemplate one of these trips may consult that issue.

Addendum. The railways have lately amplified the previous arrangements as follows: Return limit: standard convention certificates, properly filled in and executed, to be honoured at Edmonton up to and including Thursday, August 29th, for tickets for the return journey bearing final transit limit, Thursday, September 5th, 1912, on which stop-overs will be allowed at points west of Port Arthur, Ont. (instead of return limit of August 31st, continuous passage, previously announced).

TYPHOID FEVER IN PORT HOPE

THE report of Dr. Amyot, provincial analyst, gives the following information in regard to the cause of the recent outbreak of typhoid fever in Port Hope. The investigation was commenced on March 8th, 1912. With the assistance of physicians in the town, information was obtained in regard to twenty-nine cases of the disease, all of which—with the exception of one—had developed since the beginning of February. The cases developed in different parts of the town and had had no special communication with each other; none of the cases had been exposed to infection from other cases, so far as could be ascertained. The sanitary conditions in the homes of most of those suffering from the disease were fairly good, and only in a few instances could they be considered as possible sources of infection. The cases had all partaken of town water at some time during the three weeks preceding the onset of the disease, and several had been in the habit of drinking well-water. Samples of the water from these wells were examined with the following result: (1) 360 bacteria per c.c., 37 parts chlorine per million; (2) 750 bacteria per c.c., 45 parts chlorine per million; (3) 2000 bacteria per c.c., 40 parts chlorine per million; (4) 800 bacteria per c.c., 24 parts chlorine per million. In none of the samples were bacteria of intestinal origin found.

The sanitary conditions existing in factories where several of the cases were employed, were found to be far from perfect. These factories employ water from the harbour to supply part of their plant, and, by turning a valve, either the town water or the harbour water can be used in the same pipes; the taps from which the harbour water is taken are in close proximity to those distributing the town water. Of course, the danger from such an arrangement is great, as one tap may easily be mistaken for the other and the impure water used for drinking purposes. Severe outbreaks have been known to occur in the United States from similar arrangements.

A report was also prepared concerning the milk supply. A significant feature of this report was the presence of the colon bacillus in the domestic water supply of one of the milk vendors. A case of typhoid was also discovered in a family in the country; this family possessed a dairy herd and part of the milk was sold in the town.

A most dangerous source of infection, and possibly the cause of the present outbreak, is a stream which drains a large portion of the land above the Grand Trunk station, the cattle yards, and surrounding houses. The use of water from this creek, and from similar streams, is fraught with the greatest possible danger. We are glad to note that, at a meeting of the Board of Health, which took place May 3rd, it was decided that a sewer should be constructed immediately to drain this part of the town and thus eliminate the possibility of further infection, at least from this source. The wells in this locality constitute another source of danger to the health of the citizens, and it is recommended that they be closed up and filled with town water, which usually contains less than one hundred bacteria per c.c.

A CURIOUS reason has been given for not attending the Edmonton meeting of the Canadian Medical Association, in August. It has been thought that by doing so risk would be incurred by those who are subject to hay fever. Any possible precaution against this distressing and unpleasant malady is to be commended, but a journey to the western part of the Dominion would constitute a cure rather than a danger of contracting the disease. Hay fever and asthma, so we are informed by Dr. Whitelaw, are distinctly rare in Alberta, and may be said to be non-existent there when compared with eastern Canada. Hundreds of people, now living in the west, are entirely free from attacks, who, every summer, invariably suffered severely from the disease when living in eastern Canada. These people cannot return to the eastern part of the country during the summer without suffering from a recurrence of the attacks. The assurance may be given, therefore, to any members who hesitate to attend the meeting in Edmonton, that, with few exceptions, they will find their symptoms much alleviated, or entirely absent, as soon as they are west of the Great Lakes. That they will continue to be free from attacks on their return to the east cannot be guaranteed, even by the profession in the optimistic west.

THE ONTARIO MEDICAL ASSOCIATION

THE thirty-first annual meeting of the Ontario Medical Association was held at Toronto, on May 21st, 22nd and 23rd, 1912. The president, Dr. Herbert A. Bruce presided, and there were present three hundred and sixty-one registered members, over one hundred in excess of the attendance at any previous meeting. Of these about one hundred registered as full members and thus became members also of the Canadian Medical Association. The meeting marked a departure from the usual programme of such meetings, in that, aside from those in the general meetings, only one or two papers were read. In their place case reports were read, and cases presented both by Toronto members and members from outside the city. This innovation followed the idea of the committee that a purely clinical meeting would be more practical and instructive that the usual series of didactic papers.

In the absence of Dr. William Alden Turner, of London, England, who was to have given the address in medicine, Dr. J. T. Fotheringham read the paper which he had prepared on "Some aspects of neurology to general practice." An abstract appears below.

In neurological cases, although careful bedside examination may mean complete diagnosis, yet in many cases laboratory aid cannot be dispensed with. By lumbar puncture and examination of the cerebro-spinal fluid, cellular and bacterial elements may be examined and valuable information obtained as to the source of infective processes, although the mere finding of polymorphonuclear leucocytes does not necessarily prove the existence of suppurative meningitis. Bacteriological examination of the fluid in serous meningitis, cerebral tumour, and hydrocephalus, will distinguish them from meningitis, notwithstanding the similarity of symptoms. The discovery by Widal, Sicard, and others, that the lymphocytes increase in the cerebro-spinal fluid of paralytic dementia and tabes dorsalis is of great value in clearing up cases which are obscure, while the fact that the Wassermann test is frequently positive in these cases adds a further reaction of importance to diagnosis.

In cases where it is difficult to say from the physical signs alone (Argyll Robertson pupil, altered reflexes, etc.) whether the symptoms are functional and temporary or not, the Wassermann has been valuable. Positive in the blood serum of such a case, it would be merely an indication of the constitutional state. When, however, it is positive in the cerebro-spinal fluid and is associated with lymphocytosis, a diagnosis of parasyphilis, probably paresis, can be made with confidence. The number of positive Wassermann's found in tabes dorsalis varies with different observers from ten to fifty per cent.

Lumbar puncture, as a therapeutic method, is limited in value, since its application is practically limited to meningitis.

Sero-therapy in cerebro-spinal meningitis appears to have been successful when applied early. In poliomyelitis, although the infection seems to be similar, results with curative sera and vaccines are discouraging. In the meningitides secondary to ear disease, vaccines have their place as auxiliaries to operative treatment. Autogenous vaccines should be prepared and employed in all of these cases.

Röntgen rays find little application for their use in diseases of the nervous system. At the same time, an interesting recent observation has been the fact that, by such means it was discovered that a cervical rib may be the cause of muscular atrophy. By the aid of the bismuth meal and *x*-ray in cases of neurasthenia accompanied by gastro and enteroptosis, the stomach and intestines may be examined accurately as to size, shape, position, and motor actions.

Bromides in Epilepsy. A strong feeling exists in the popular mind that bromides in epilepsy are not only useless, but actually harmful. Before 1857, the date of the introduction of bromides, many cures were reported by the users of such drugs as zinc oxide, silver nitrate, and belladonna. Modern statistics differ from these very little. Writers such as Pierce Clarke, argue that hence bromides are neither necessary nor desirable.

The actual effect of bromides in epilepsy is variable and uncertain. In perhaps twenty-five per cent. of cases the attacks are either temporarily or permanently arrested. This class probably includes the spontaneously curable cases of the disease and here bromides are desirable. In a second group amounting to a further twenty-five per cent. the fits become less frequent. This may be looked on as the common, temporary result of bromide treatment. In a third group, composed of fifty per cent. of all cases, bromides either have no effect or else an absolutely deleterious one. Certainly all cases of recent origin should be given the benefit of the remedy for a time, although, in addition, occupation and general physical and mental hygiene should be attended to.

There are two age periods when "growing out of" may be looked for in epilepsy. The first is the period of childhood, between five and eight, in those whose fits commenced in infancy. A second is between the age of twenty-one and twenty-six, in those whose fits commenced during puberty. The climacteric period has little or no effect on the disease, and the same may be said of the establishment of the catamenia. The idea that marriage and pregnancy influence its course favourably is, as a rule, erroneous. The influence on the offspring of such a union is more marked than upon the individuals primarily concerned, since it is unlikely that all will escape.

MIND AND BODY, HYSTERIA. In the past, the close and all-pervading inter-relation between mental and physical symptoms has been largely disregarded. No physical disorder, however slight, fails to produce at least some effect upon the mind, while, on the other hand, the course of any acute disease depends largely on the attitude which the patient takes regarding it. Often the "ipse dixit" of the physician will dispel grave fears, although in other cases such doubts and fears may be actual manifestations of disease, as in genuine hypochondriasis.

The effect of emotion upon physical conditions has been ingeniously shown by the experimental researches of Rawlon on the salivary secretion of dogs. Viewing the subject from its clinico neurological standpoint, it becomes evident that worry and depressive states, characterized by morbid fears, are associated with marked derangement of bodily functions. Owing to the lessened vascular tone of such conditions, the body is more prone, also, to receive the encroachments of infective organisms.

There are at present three chief theories of hysteria, all viewing the malady from the psychical side. Two of them (Janet, Frend) use the theory of the subconscious mind, while the third (Babinski) emphasizes the cardinal importance of suggestion. Janet's theory implies that "in proportion as the field of personal consciousness diminishes so do the subconscious mental conditions tend to flourish and abound" (Ormerod). By this means, viewing the hysterical crises and fits or hysteric and somnambulistic states, many characteristic symptoms are explained and may even be used to elucidate the motor and sensory symptoms. In the latter cases, of course, the anæsthetic areas are no longer connected with the main consciousness.

The theory of Babinski (physician to la Pitié) is that hysteria is a special psychical state giving rise to certain symptoms which can be reproduced by suggestion with rigorous exactness in certain subjects, and be made to disappear under the sole influence of persuasion, thus taking Charcot's main contention that to be hypnotizable is to be hysterical and that exaltation of excitability is common to hypnosis and hysteria.

Frend, the Viennese psychologist, holds that hysteria is due to repressed complexes, generally of a sexual nature. If a moral or emotional shock is experienced, a physical trauma, or painful impression is made on the mind and if relief is not obtained by giving way to the feelings or forgetting, the painful emotion is repressed into the subconscious strata of the mind, where it is kept. Here it behaves somewhat as a foreign body capable of influencing consciousness, but in a distorted or indirect way. Criticism of Frend's view should separate his conception of conflict, repression, and the influence of the subconscious mind from the methods of psycho-analysis, by which he has arrived at his conclusions. The acceptance and application of the sexual origin of hysterical symptoms has met with much opposition.

Psycho-Therapeutics. In view of the psychical origin of all hysterical symptoms as well as the closely allied psychoneuroses, it is not unnatural that present-day methods of treatment should be, in the main, psychical. The moral influence of medical men over their patients has long been recognized, but something more than mere verbal encouragement or reassurance is necessary in psycho-therapeutics to-day. Modern methods of treatment are limited. Direct suggestion may be of two kinds, in one of which suggestion is effected during hypnotic sleep, in the other during the waking state. In the former case the physician introduces new ideas into the patient's consciousness or destroys existing ideas without the patient's consent. The latter form, however, closely approaches persuasion.

Persuasion implies the reëducation of the patient's mind by reasoning and argument. By it the physician endeavours to reason with and educate his patient in the causation and production of his symptoms. The good effects depend on the confidence with which the physician inspires his patient.

Psycho-analysis, in the sense employed by Frend is the evolution of a repressed idea by a form of confession and the re-conduction to the patient's consciousness of the thoughts underlying the symptoms.

All of these methods of psycho-therapy have their limitations. On the part of the physician a knowledge of the causes and symptoms of hysteria and allied neuroses is essential, as well as a knowledge of the temperament of the patient. For the undertaking of such work, those who give their attention to mental and nervous diseases are best qualified. Physical means in conjunction with psycho-therapeutic efforts are desirable. Isolation of patients in a home or special ward, deprivation of visits from relatives or friends during the course of treatment, cutting off of correspondence and the like, are necessary adjuvants. Rest in bed, abundance of milk, massage, and regular exercise are desirable in the majority of cases.

TUESDAY MAY 21ST, 10 A.M.

Symposium on Graves' Disease, Ætiology and Pathology, Dr. W. T. Connell, Kingston; Symptoms and Diagnosis, Dr. Marquis, Brantford; Surgical Treatment, Dr. Olmsted, Hamilton; Discussion, Dr. Shillington, Ottawa.

3 p.m. After the reading of the minutes a nominating committee was appointed. Dr. A. J. Gibb Wishart, then addressed the meeting on the efforts being made to discover the ætiology of ozæna. He presented the following resolution, which was adopted: "That the Ontario Medical Association have heard with great interest the report of what is being attempted by the International Laryngological Congress towards the elucidation of the ætiology of ozæna and requests the individual coöperation of its members in assisting the local committee to gather the information required. This association would also urge upon the Dominion and Provincial governments the importance of placing the fullest facilities at the disposal of the committee and request that the Provincial Board of Health be requested to coöperate in every way possible."

Prof. McPhedran, seconded by Prof. Leathes, then moved a motion regarding the recent resignation of Dr. Caulfeild from Gravenhurst Sanitarium. After considerable discussion the matter was left in the hands of a committee which was to report at the business meeting of May 22nd. Dr. F. N. G. Starr, seconded by Dr. McKinnon, of Guelph, moved a resolution in reference to the practice of fee-splitting. This finally took the form of a notice of motion to amend the code of ethics which read as follows:

"That it be contrary to ethics for any member to pay a commission to any person who might influence patients to apply for professional advice or treatment.

"That a specialist is entitled to receive his regular fee from the patient without regard to the medical man in charge of the case.

"That in cases where the specialist is called in to assist in the diagnosis or to operate, but where the entire management of the case devolves on the regular attendant, the surgeon's fee should not be less than half of the amount he would charge if the case continued under his full management."

4 p.m. Meeting of Sections.

8 p.m. President's address, Dr. Herbert A. Bruce.

Following Dr. Bruce's address, Dr. Alexis Carrel, of the Rockefeller Institute, New York, read a paper on "Experimental researches in the surgery of the blood vessels and transplantation of tissues and organs." Dr. Carrel spoke in part as follows:

The most satisfactory method of vascular anastomosis dates from a study of the technique used by Payr and Murphy nine years ago. Since then, investigations have been carried on in the University of Lyons, the University of Chicago, and the Rockefeller Institute for Medical Research, resulting in important modifications of earlier methods.

It has been found that certain rules must be adhered to absolutely. A rigid asepsis is essential since the very slightest infection may cause thrombosis. Since injury to the wall of a vessel will have a similar result, only the external sheath of an artery or vein should be lifted by forceps. Humidification of vessel walls with Ringer's solution, coating with vaseline and resection of the external sheaths of vessels to be sutured, prevent fibrin formation, and hence, again, obliterative thrombosis. The hands of operators must be coated with vaseline and the fine threads and needles used must be sterilized in the same medium.

Temporary hæmostosis is secured by the use of small Crile clamps on an ordinary serrafine, while washing of the vessels is effected by means of a Gentile syringe. Sutures are laid out on a black towel, on which they may be readily seen, and the field of operation is surrounded by black Japanese silk. After incision and dissection of the part, all vessels to be attached are carefully clamped, cut, and washed out with Ringer's solution. Then suturing is proceeded with.

Anastomosis may be arterial, venous, or arterio-venous. Classified as to method, it may be termino-terminal, consisting of uniting the ends of two vessels, termino-lateral, consisting of implanting the end of a vessel into the wall of another, or latero-lateral, in which the vessels are united on their lateral aspects. In all cases continuous suture is used and the tubes of various materials, which were formerly used, are dispensed with. When the suturing is completed, the result is carefully examined and, if no flaws are found, all clamps are removed and the circulation slowly permitted to return.

The materials used for transplantations are not necessarily fresh, in the ordinary sense of the word, since it has been found possible to preserve the elements of life in vascular tissues for considerable periods of time, apart from the body.

The actual method consists in extirpating vessels under rigid aseptic precautions, washing them in Locke's solution, immediately placing them in a glass tube which contains, on a small piece of absorbent cotton, a few drops of the same solution, and then sealing the tube and keeping it at a temperature of 1° Cent. It has been found that from a histologic standpoint the muscle fibres often remain normal even after one month, although they tend to become less elastic.

After healing has taken place, examination of gross specimens of transplanted blood vessels shows slight anatomical changes. Frequently it is hard to even find a scar, while aneurysm and stenosis are rare. Microscopic examination reveals a condition differing little from the normal, but in vessels which have been preserved for long periods of time outside the body, histologic changes are frequent.

Vessel anastomosis has made the operation of transplantation of organs quite feasible and, experimentally, such operations have been performed as transplantation of thyroid, parathyroid, and suprarenal glands; of ovaries, and spleens; double extirpations and transplantation of kidneys in dogs and cats. Similarly limbs have been successfully transplanted from one dog to another and, in one instance, an auricle, external auditory canal, part of the scalp, lymph glands of the neck, and parts of the common carotid artery and external jugular vein were transplanted "en masse" from one dog to another.

Dr. Carrel illustrated his address by a series of lantern slides demonstrating his technique and actual cases in which tangible results had been obtained.

WEDNESDAY, MAY 22ND

9 a.m. Clinics at the medical building in all sections.

12.30 p.m. Complimentary luncheon tendered by the City Council.

AFTERNOON

2 p.m. The address on surgery was read by Dr. Geo. W. Crile, professor of surgery, Western Reserve University, Cleveland. His subject was "Anoci association, a new principle in operative surgery."

This interesting paper had to do with the elimination of shock by measures taken before, during, and after operative procedures. It has been impossible to secure an abstract of it, but it is hoped that the paper will later appear in full in the JOURNAL.

BUSINESS MEETING

Election of officers resulted as follows: President, Chas. G. McGillivray, Whitby; 1st vice-president, A. T. Shillington, Ottawa; 2nd vice-president, Taylor, Goderich; 3rd vice-president, W. T. Parke, Woodstock; 4th vice-president, Chas. H. Harris, Cobalt; secretary, F. A. Clarkson, Toronto; treasurer, J. H. Elliot, Toronto.

COMMITTEE ON CREDENTIALS: R. R. Wallace, Hamilton; Norman Walker, Toronto; W. K. Colbeck, Welland; J. W. S. McCullough, Toronto; S. A. McCoy, Toronto.

PUBLIC HEALTH: W. T. Beeman, Newburg; Jno. Sheahan, St. Catharines; W. C. Olmstead, Niagara Falls; G. M. Davis, Welland; C. J. O. Hastings, Toronto; Lorn Drum, Ottawa.

BY-LAWS: J. W. S. McCullough, G. S. Ryerson, Toronto; J. H. McGarry, Niagara Falls; Jno. Malloch, Toronto; W. T. Connell, Kingston; C. P. Lusk, Toronto.

ETHICS: A. B. Osborne, Hamilton, A. R. Casgrain, Windsor; J. N. Beadley, Creewale; J. O. Ivey, Cobourg; E. T. Killam, Niagara Falls; S. Johnson, Toronto; C. H. Bird, Gananoque; B. L. Riordan, Toronto.

Place of meeting next year—Toronto.

The reports of the various committees were then received.

Following the report of the committee in whose hands it was left the following resolution was adopted.

"Resolved that this association, representing the profession of Ontario, desires to place on record its emphatic condemnation of the destruction of the cultures, extracts, and other biological products, representing many months' work, of the physician in charge of the department of scientific investigation in the National Sanitarium Association.

"That a copy of this resolution be sent to each member of the board of the National Sanitarium Association."

Moved by Prof. McPhedran, seconded by Prof. Leathes.

Following this resolution, a resolution was put before the association regarding the registration of osteopaths.

Moved by J. W. S. McCullough, seconded by Richard A. Reeve: "That this association desires to express its most determined opposition to the registration of any kind of so-called 'medical sectarian practitioner,' unless he shall have fulfilled the requirements laid down by the College of Physicians and Surgeons, and that this association is opposed to the lowering of the present standard of medical education in this province."

THURSDAY, MAY 23RD

9 a.m. Clinics at the General, St. Michael's, Grace, and Western Hospitals, and at the Asylum, Queen St.

ENTERTAINMENTS: At 5 p.m., May 22nd, a garden party was given to the members of the association by the president, Dr. Herbert A. Bruce, at his residence. The weather was delightful and the function most successful. H.R.H. the Duke of Connaught graced the occasion by his presence. At 8 p.m., May 22nd, the annual dinner took place. Among the speakers were: Hon. T. A. Reid, Justice Riddell, Rev. Archdeacon Cody, President Falconer, Dr. Fotherinhgam, Dr. McKid, president of the Canadian Medical Association, Hon Adam Beck, and others.

On Thursday afternoon, May 24th, through the courtesy of the directors of the Ontario Jockey Club, complimentary badges were issued to members of the Association and their wives for the races at the Woodbine. The various golf clubs of the city also extended their hospitality to the members.

THE property of the memorial hospital at Red Deer, Alta., has been transferred to the city council. Additional accommodation is urgently required in the hospital and this will necessitate new buildings, the cost of which is estimated at about fifteen thousand dollars. The hospital board feels unable to collect this amount by voluntary subscriptions and, therefore, it has been considered best that the property should be transferred to the council. It is proposed to submit a by-law to the electors for the purpose of raising the money needed to make the necessary additions to the hospital.

Book Reviews

SURGICAL OPERATIONS. A hand-book for Students and Practitioners. By PROFESSOR FRIEDRICH PELS-LEUSDEN, Chief Surgeon to the University Surgical Clinic in the Royal Charity Hospital, Berlin. Translated by FAXTON E. GARDNER, M.D. 726 pages with 686 illustrations. New York: Rebman Company, 1912.

The books which are published by the Rebman Company have a distinction of style which is peculiarly their own, and we are indebted to this company for many translations into English of books which are accepted as standards in foreign countries. Professor Pels-Leusden is known to many Canadian surgeons who are in the habit of going to Berlin, and they have seen him at work in the Royal Charity Hospital. The translation is done by Dr. Faxton E. Gardner, and it is deserving of high praise. The book bears the title merely "Surgical Operations," being less formal than the one upon "Operative Surgery," and much more comprehensive than a Manual of Technique. The illustrations are drawn by a colleague, Dr. Muller. They are for the most part diagrammatic, and are all the clearer for lack of accessories. It is proper to observe that Professor Pels-Leusden entirely misapprehends the meaning of Lister's work. It is only a partial statement of the case that Lister was content with destroying the germs that had entered a wound. He was equally anxious to prevent them from gaining an entrance. This book covers the whole period of surgery and may be taken as an accurate reflection of modern German methods, and of corresponding value to all operators.

THE HOUSE FLY, DISEASE CARRIER. An account of its dangerous activities and of the means of destroying it. By L. O. HOWARD, PH.D. New York: Frederick A. Stokes Company.

To-day, everyone knows that the house fly may carry disease. The knowledge has been spread by numerous articles published in scientific journals and in the daily newspapers. Occasionally, some of these articles have made extravagant statements. It is the object of the present book, which is written by one who did a great deal to spread the knowledge of the danger of the house fly, to present in a concise and easily obtainable form all the facts that are important in considering house flies as possible conveyers of disease. The book is an excellent one. It is well written and contains much information that every doctor should have at his finger tips.

THE CAUSE OF CANCER, being Part III of "Protozoa and Disease." By J. JACKSON CLARKE, M.B., F.R.C.S., Senior Surgeon to the Hampstead and North West London Hospital, and Surgeon to the Royal National Orthopædic Hospital. Author of "Surgical Pathology and Principles" and other books 112 pages with eight plates and one coloured illustration. London: Ballière, Tindall & Cox, 1912. Price 7s. 6d. net.

The author's view is that cancer and sarcoma are caused by parasitic protozoa, and he has elaborated it upon 110 attractive pages, illustrated with drawings and diagrams. A year or two ago this theory had greater vogue than it has to-day, and the best opinion is that no such easy solution of the cancer problem is likely to be the true one. In any event this book contains a clear statement of the evidence, and as such is of value, even to those who do not regard it as convincing.

REAZIONE DI A. WASSERMANN E SUO VALORE IN SEMEIOLOGIA CLINICA. A critical and experimental study by DR. LUIGI MASSINI. From the Institute of General Clinical Medicine of the Royal University of Genova, Laboratory of Histology and Bacteriology. Genova, Fratelli Waser.

As stated above this is a critical study of the literature combined with the author's conclusions from his own experimental work. It consists of some 150 pages, many of them taken up with tables and not a few with references to the voluminous literature on this subject. While his conclusions do not differ from those which on other occasions have figured in the pages of this journal, it may not be amiss to quote, somewhat freely translated, the more important. The Wassermann reaction is not a true Bordet-Gengou reaction, but a chemical method with a clinical backing. A reaction *sui generis*. It has a definite biological value in that it has put new life into biologic biochemical and physico-chemical research in the field of serology. It is not a reaction which the general practitioner can use himself, nevertheless it is useful to the practitioner in that it supplies reliable information as to diagnosis, prognosis, and prophylaxis of syphilis. It is practically specific for syphilis, the other diseases which may give a positive reaction being easily excluded.

The Wassermann reaction is useful only when positive. A negative reaction has no significance either in excluding syphilis or in prognosis. In the latter case, however, where a series of reactions prove negative and where treatment has been long continued, one may conclude that the disease is attenuated or extinct. It confirms the luetic origin of general paresis and tabes. The cerebrospinal fluid is useful here. Specific treatment affects the reaction, whether this be by mercury or arsenic. These drugs are most efficient by inunction, or intravenous or intramuscular. By the mouth neither Hg. or As. have much influence on the reaction. It is dependent on the date of infection and the terms and type of treatment, beginning twenty-one to twenty-eight days after the primary sore, and is always present in secondary syphilis. The reaction is useful in the diagnosis of metasyphilis, cardiovascular, adenopathies, visceral lues, etc. It is useful in clearing up cases where the patient himself is unaware of having had syphilis. It explains the laws of Colles and Profeta and is useful in prophylaxis and in forensic medicine, e.g. in the question of marriage.

In short the book is a good critical study of Wassermann's reaction and its modifications, which is just what it pretends to be, and to those who read Italian we can heartily commend it.

INSECTS AND DISEASE. A Popular Account of the Way in which Insects may Spread or Cause some of our Common Diseases. With many original illustrations from photographs. By RENNIE W. DOANE, A.B., assistant professor of entomology, Leland Stanford Junior University. New York: Henry Holt & Co., 1910.

This book fills a useful purpose, since it provides a medium by which busy practitioners and laymen can learn quickly something of the knowledge which has been gained recently of the ways in which insects cause disease in human beings. Although the book contains a few inaccuracies, it presents a very readable statement of the present day knowledge of the subject, and occasionally it alludes to the interesting history of the researches by which that knowledge was acquired. There is a good index, and the forty-five pages of bibliography may please some who wish to learn more of this subject and do not know where to find books treating of it.

PELLAGRA. By GEORGE M. NILES, M.D., Professor of gastro-enterology and therapeutics in the Atlanta School of Medicine, Atlanta, Georgia. Octavo of 253 pages, illustrated. Philadelphia and London: W. B. Saunders Company. Cloth, $3.00 net. Sole Canadian Agents, The J. F. Hartz Co., Ltd., Toronto.

This book consists of a small amount of personal experience surrounded by a mass of quotations. Some of the personal experiences are good; the quotations are given badly. The book is not well written; it is wordy; it wanders; it is inconsequent; and there are few pages without a grammatical error, or other mistakes. The author advances it as a contribution to the American literature of pellagra. It is conceivable that the book might be useful to some practitioner in a remote district of the Southern States, who required a description of the precise way in which pellagra might manifest itself among his patients; it is of little value to anyone else.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEY. By ROBERT H. GREENE, M.D., professor of genito-urinary surgery at the Fordham University, New York; and HARLOW BROOKS, M.D., assistant professor of clinical medicine, University and Bellevue Hospital Medical School. Third revised edition; octavo of 639 pages with 339 illustrations. Philadelphia: W. B. Saunders Company, 1912. Price: Cloth $5.00 net; half morocco $6.50 net.

That a third edition of this book has been necessary within so few years speaks for its usefulness as well as for the opinion of the student and practitioner for whom it is intended. As a genito-urinary text-book it is commendable in that it is concise; represents the true opinion of the authors while doing justice to those from whose views they may differ; makes frequent references to original papers and other literature; is the conjoint work of a physician and surgeon, which makes for broadness, and especially in that it is evidently founded upon a large clinical and pathological experience. On the other hand, the illustrations might have been better, they are almost too diagrammatic, and in a study where so much depends upon technique a little more on the study of the separated urines would not have been amiss. The book is eminently sane and is a distinct improvement over both former editions. It is a relief to read it after some of the more pretentious volumes on this study.

Differential Diagnosis. By Richard C. Cabot, M.D., Assistant Professor of Clinical Medicine, Harvard University Medical School, Boston. Second edition, revised and profusely illustrated. Philadelphia: W. B. Saunders Company, 1912.

The second edition of this work follows the first quickly, showing that it has appealed to many readers. It does this partly by its novelty and partly by its individual characters, characters which it honestly inherits from its talented author. We are by no means sure that differential diagnosis is a subject that can be taught—one physician selects his diagnosis from two, another from ten, possibilities—but a book like this tends to give to the mind practice in the right mode of thinking; the author will weary in well-doing before he gets enough cases tabulated to cover the ground properly, but no one recognizes this so well as he himself. Meantime, to those who do not know the book, it may be said that the cases are grouped by means of the most striking symptoms, and the widely different forms of disease which may present the same striking symptom furnish much food for thought. We find Professor Cabot's book good to read.

Clinical Disorders of the Heart Beat. By Thomas Lewis, M.D., D.Sc., M.R.C.P., lecturer in cardiac pathology, University College Hospital Medical School; physician to outpatients, City of London Hospital for Diseases of the Chest. London: Shaw & Sons, 1912.

We have read this book with some care and much interest; it is designed for the practitioner who is desirous of profiting by recent knowledge acquired by graphic methods of examining the heart, but who has neither the necessary instruments nor the training to apply them. It is perhaps with a sigh of relief that such a one reads Dr. Lewis's remark "the acquisition of the special manipulative skill and the necessary experience . . . . entails too great an expenditure of time and energy adequately to repay him or the patients he serves." If this dictum be accepted, we think it unlikely that there is a more royal road to this knowledge than by Dr. Lewis's book. It is short, clear, and direct. Sinus irregularities, heart-block, premature contractions, paroxysmal tachycardia, auricular fibrillation, and alternation of the pulse, are taken up separately and each is explained and discussed. The modes are indicated by which these may be recognized, and the remarks on prognosis and treatment seem to be especially apt.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

SURGICAL OPERATIONS. A Hand-book for Students and Practitioners. By PROF. FRIEDRICH PELS-LEUSDEN. Translated by FAXTON E. GARDNER, M.D. Illustrated with 668 engravings. New York: Rebman Company, 1912.

DUODENAL ULCER. By B. G. A. MOYNIHAN, M.S. (Lond), F.R.C.S. Second edition, enlarged. Illustrated. W. B. Saunders Company, Philadelphia and London, 1912.

DIFFERENTIAL DIAGNOSIS. By RICHARD C. CABOT, M.D. Second edition, revised and illustrated. W. B. Saunders Company, Philadelphia and London, 1912.

PELLAGRA: AN AMERICAN PROBLEM. By GEORGE M. NILES, M.D. Illustrated. Cloth $3.00. W. B. Saunders Company, Philadelphia and London, 1912.

DISEASES OF THE GENITO-URINARY ORGANS AND THE KIDNEY. By ROBERT H. GREENE, M.D., and HARLOW BROOKS, M.D. Third edition, revised and enlarged, with 339 illustrations. Cloth $5.00 net; half morocco $6.00 net. W. B. Saunders Company, Philadelphia and London, 1912.

A POCKET FORMULARY. By E. QUIN THORNTON, M.D. Tenth edition, revised. Price $1.50. Philadelphia and New York: Lea & Febiger, 1912.

WHAT TO DO IN CASE OF POISONING. By WILLIAM MURRELL, M.D., F.R.C.S. Eleventh edition. Price 3s. net. London: H. K. Lewis, 1912.

ONE HUNDRED SURGICAL PROBLEMS. By JAMES G. MUMFORD, M.D. Boston: W. M. Leonard, 1911.

FORMULAIRE DES SPECIALITES PHARMACEUTIQUES POUR 1912. By DR. VICTOR GARDETTE. Sixth edition. Paris: J. B. Baillière et Fils, 1912.

TEXT-BOOK OF OPHTHALMOLOGY. Volume I. By DR. PAUL ROEMER; translated by DR. M. L. FOSTER; with 186 illustrations and 13 coloured plates. Price $2.50. New York: Rebman Co., 1912.

A DICTIONARY OF TREATMENT. By SIR WILLIAM WHITLA, M.A., M.D., LL.D. Fifth edition. Price 16s. net. London: Baillière, Tindall & Cox, 1912.

CLINICAL CHEMISTRY, MICROSCOPY AND BACTERIOLOGY. By DR. M. KLOPSTOCK and DR. A. KOWARSKY. Price $3.00. New York: Rebman Company, 1912.

NEW AND NON-OFFICIAL REMEDIES, 1912. Cloth $0.50, paper $0.25. Pages 298. Chicago: American Medical Association, 1912.

DEFORMITIES INCLUDING DISEASES OF THE BONES AND JOINTS. By A. H. TUBBY, M.S. (Lond.), F.R.C.S., (Eng.) Vols. I. and II. Illustrated. Price $12.00 net. Toronto: The Macmillan Company of Canada, 1912.

FELLOWSHIP EXAMINATION PAPERS FOR THE ROYAL COLLEGE OF SURGEONS, Edinburgh, 1906-1912. Price 1s. net. Edinburgh: E. & S. Livingstone.

DENTAL EXAMINATION PAPERS FOR THE DIPLOMAS OF THE ROYAL COLLEGE OF SURGEONS, Edinburgh, 1906-1911. Price 1s. net. Edinburgh: E. & S. Livingstone.

REAZIONE DI A. WASSERMANN E SUO VALORE IN SEMEIOLOGIA CLINICA. By DR. LUIGI MASSINI. Genova: Fratelli Waser, 1911.

CLINICAL CHEMISTRY, MICROSCOPY, AND BACTERIOLOGY. By DR. M. KLOPSTOCK AND DR. A. KOWARSKY, of Berlin. Illustrated; price, $3.00. New York: Rebman Company, 1912.

ESSAYS AND CLINICAL STUDIES. By F. G. CROOKSHANK, M.D. Price 7s. 6d. net. London: H. K. Lewis, 1911.

WHEELER'S HANDBOOK OF MEDICINE. By WILLIAM R. JACK, M.D. Fourth edition; price 8s. net. Edinburgh: E. & S. Livingstone, 1912.

LANDMARKS AND SURFACE MARKINGS OF THE HUMAN BODY. By L. BATHE RAWLING, M.B., F.R.C.S. (Eng.), Fifth edition; illustrated; price 5s. net. London, H. K. Lewis, 1912.

NEW AND NON-OFFICIAL REMEDIES, 1912. Price, cloth, $0.50; paper, $0.25. Chicago: American Medical Association, 1912.

HOME NURSE'S HANDBOOK OF PRACTICAL NURSING. By CHARLOTTE A. AIKENS. Illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents, The J. F. Hartz Company, Ltd., Toronto.

SEXUAL IMPOTENCE. By VICTOR G. VECKI, M.D. Fourth edition, enlarged. Price, cloth $2.25 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents, The J. F. Hartz Company, Ltd., Toronto.

INFANT FEEDING. By CLIFFORD G. GRULEE, M.D. Illustrated; price, cloth $3.00 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents, The J. F. Hartz Comapny, Ltd., Toronto.

HARELIP AND CLEFT PALATE. By JAMES BERRY, B.S. (Lond.), F.R.C.S. and T. PERCY LEGG, M.S. (Lond.), F.R.C.S. 242 figures. Price, 12s. 6d. net. London: J. & A. Churchill, 1912.

THE PRACTICE OF MEDICINE. By FREDERICK TAYLOR, M.D. Ninth edition. Toronto: The Macmillan Company of Canada, 1912.

SYSTEMATIC CASE-TAKING. By HENRY LAWRENCE MCKISACK, M.D. Price, 3s. 6d. net. London: Baillière, Tindall and Cox, 1912.

Res Judicatæ

THE CONSERVATIVE TREATMENT OF SUPPURATIVE OTITIS MEDIA

THE cause of suppurative otitis media is the operation of microörganisms. The mode of entrance is: (1) Through Eustachian tubes; (2) Through the blood; (3) Through a perforation in the drum; (4) Through the lymphatics; (5) By contiguity from nearby sources of suppuration. Acute inflammation always preceeds the chronic, and the causes of the chronic are: (1) No treatment of acute form; (2) Inefficient treatment of acute form; (3) Virulent infection which involves the bone or antrum from the beginning.

It has been said that in every case of otitis the antrum is involved: but I am not prepared to admit it, believing that the auditus ad antrum may become closed by the swelling of its mucous membrane preventing the involvement of the tympanic cavity. I cannot state too forcibly that naso-pharyngeal conditions are largely responsible for otitis media, and that the microörganism producing the disease comes through the Eustachian tube in most cases. S. J. Koptsky of New York in the *Annals of Otology*, June, 1910, states that: (1) The normal tympanic cavity is sterile; (2) Pathogenic microörganisms are the cause of inflammatory reactions.

The types of otorrhœa, according to S. MacCuen Smith, vary according to their origin: (1) Naso-pharynx and Eustachian tubes, discharge ropy and mucoid. (2) Tympanic cavity alone, discharge scanty and yellowish. (3) Bone lesion, discharge yellow or greenish-yellow and offensive.

I am inclined to think that many cases of the first and second types, when they do not readily yield to mild measures, are too soon subjected to operative procedures and do not give good results because the mucous membrane is not healed by the operation, and they require the same treatment after the operation as would have cured them without the operation.

The acute condition may be mild or severe, according to the infectious organism; some are so mild as to get well without any perforation of the tympanum, others are more severe and rapidly cause perforation which, after a time—varying from a few days to a week or two—will heal, leaving the middle ear structures but little impaired; others again, caused by virulent infection of the streptococcus, as in scarlet fever, rapidly involve the bone or antrum and, unless speedily relieved, involve the mastoid. Most of the acute cases can, by proper attention, be cured by conservative measures, and they only become chronic by want of attention or by inefficient treatment. An acute otitis media, per se, does not call for operative measures, except parecentesis; and only on the onset of complications, such as involvement of the mastoid, does it become necessary to operate.

Parecentesis, in severe acute conditions where the exudation is of great amount, causing severe pains and bulging of the tympanum, is a necessary treatment and a method of prevention from more serious complications. As naso-pharyngeal abnormalities are the chief cause of otitis media, it is important that this region be put right, and adenoids, pharyngeal adhesions, and congestions removed by appropriate means.

In chronic naso-pharyngitis, I have found that direct applications, by means of a bent applicator, to the region affected, by way of the mouth, are one of the most effective methods of treatment, using stimulating or astringent applications as seem necessary, such as, iodo-tannin solutions, iodine and potassium iodidi, ammonio-ferric-sulph, agnoz, etc. Acute otitis, in children especially, will be practically cured by irrigations, with the exception of virulent infections. After the subsidence of acute inflammation I have found it beneficial to inflate the Eustachian tubes with medicated vapour from nebulizer two or three times a week, to promote absorption of exudates, so as to prevent adhesions and consequent impairment of function.

By the time the conditions have become chronic, most of the lower half of the drum membrane will be destroyed. If not, a combination treatment such as enlargment of the opening, syringing of the middle ear, and inflation of the Eustachian tube, continued for weeks or months if necessary, will result in such a condition that the mucous membrane of the middle ear will be free from all discharge, except a little moisture at times, which condition might be regarded as a cure. I regard free drainage as perhaps the most important essential, and if the drum opening is small I should suggest its enlargement. If the opening is small but large enough for the introduction of the tip of a middle ear syringe, I should use the latter; this treatment in combination with Eustachian tube inflation—with medicated vapour preferred—is usually successful.

During the treatment my patients use antiseptic syringing or irrigations at home between the intervals of my office treatment, employing preferably bichloride solutions; special attention is paid to the free ventilation of the Eustachian tube where the nature of the discharge, or other symptoms, point to this tube as being the source of the trouble.

The treatment most frequently employed was inflation by vapour from nebulizer; when using the treatment make sure that the drum perforation is large enough to give free vent to any pus or secretion blown out.

I have not used fluid injections through the tubes from the throat, preferring treatment of throat, and drops into ears which percolate down tubes.

I frequently use the old-fashioned remedy of dropping alcohol and acid boric into the ears, and have not as yet found anything better where there is a swelling of mucous membrane and a tendency to the formation of polypi. It is always necessary to remove polypi and then seek to remedy the condition that produced them, which is often found in want of cleanliness, insufficient drainage, etc.

Middle ear syringing with Blake's syringe is one of my frequent treatments. I have cured cases of suppuration that have continued for from ten to twenty years, in which the malleus and incus had both disappeared, by the persistent use of irrigations, drops, and drainage; so that although the inner wall of the mucous membrane is exposed, no trouble arises except occasionally a little moisture. Injections consist of solutions made up of equal parts of bichloride, formalin, alcohol, and acid boric,—or hydrogen dioxide,—aqua and glycerine.

Aspiration I regard as one of the most important methods of treatment in chronic cases. Rarify the air so that the membrane is congested and filled with pure blood, and you have a condition that tends to throw off the unhealthy diseased tissue and dead bone. Aspirate, then use middle ear syringe with an antiseptic solution. Do this two or three times a week and let the patient syringe the ear at home between times.

Should most of the drum membrane be gone, and the ossicles be much retracted and adherent to the inner wall, so as to materially obstruct drainage, I regard their removal as necessary. I have removed the ossicles in two cases with results that have surprised me, as, with the free drainage secured, the ear in each case rapidly dried up; in each case this satisfactory condition has now persisted for several years. In one case, after removal of the ossicles, bare bone was detected and the attic curetted with good results. Edward

P. Fowler, N.Y., says in the *Annals of Otology* for June, 1910, that in a study he has carried out he finds that twelve per cent. of all diseases of middle and internal ear give positive specific reactions by Noguchi's method and are improved by anti-specific treatment. This may help us in the future.

I do not recommend the use of the dry dressing of acid boric, as my experience with this dressing has not been satisfactory. Neither do I recommend the use of gauze, as in most cases, it is necessary to remove it so often that the patient frequently objects; I have found that equally good results are obtained by the open wet method.

VACCINE THERAPY. Dr. E. W. Nagle, of Boston, reports forty cases, from dispensary and private practice, treated with antogenous serum, of whom thirty-nine were cured. Other observers do not report so favourably; in cases where the bone is involved, the vaccine treatment does not seem to be satisfactory. On May 10th, Dr. Sidney Yankauer, of N.Y., reported the cure of six cases by curetting the Eustachian tube by a special instrument introduced through a tympanic perforation, thus cutting off reinfection through the tube. Bare or rough bone alone is not a sufficient indication for operation, nor is polypi. In the *British Medical Journal*, of November 17th, 1906, Gorham Bacon said: "In considering the advisability of operation in a patient suffering from chronic otorrhœa, we should determine whether the perforation is sufficient for good drainage, if the opening is large and we can readily pass a probe into the attic and find but little carious bone, and, further, if the patient does not complain of pain, headache, or dizziness, I feel it is our duty first of all to try to cure the disease by means of middle ear injections."

INDICATIONS FOR OPERATIONS. Drainage poor, much carious bone, recurrence of polypi, earache, headache, discharge offensive, dizziness, nausea, cessation of discharge with increasing headache. In private practice, in which I have gained my experience, I think the percentage of cases of chronic otorrhœa requiring operation is small. Discharge, in amount too great to be produced in tympanic cavity and attic, and previous symptoms of mastoiditis point to need of radical operation. The number of cases of chronic otorrhœa is gradually decreasing year by year, as the necessity of properly treating the acute cases is brought home to the general practitioner.

A difficult class of case is that of recurrent acute attacks in chronic affections, where the drainage is not good and part of the ossicles is present; I am inclined to think, from my experience, that ossiculectomy is advisable in many of these cases. In the absence of symptoms of lesions of the antrum, mastoid, internal ear, or brain, I should recommend conservative treatment, rather than radical operation. Middle ear lesions, also, do not call for operation. The complications necessitating operation are generally produced by the lack of any treatment, and are not due to preventive treatment. In treating a case of suppurative otitis media, the first thing to be decided is whether it is a case which does or does not present symptoms which necessitate an immediate operation, by reason of complications such as involvement of the mastoid or brain.

If there are no urgent symptoms calling for immediate operation, and the only trouble to the patient is one of constant discharge, or more or less dullness of hearing, then the question to be considered is whether treatment or operative interference will be likely to give him the best results, in stopping the discharge and improving or conserving the hearing powers. Many persons cannot see the necessity for, and will not submit to, a radical operation, and in these cases, in the absence of complications making operation imperative, you are limited to conservative measures. Some other patients would submit to operation if you could promise a complete cure, which you do not care to do, seeing that many cases, after operation, remain under the necessity of continued treatment for a certain amount of discharge.

The pendulum is now swinging back a little from the impetus given it by the brilliant results attained in certain cases, in skilful hands, by the radical operation, as the same good results have not always been obtained since the operation has been more universally performed and not limited to the cases specially requiring it. The Heath operation which preserves the hearing, if performed when the ossicles are intact and membrane partly preserved, will, I think, in the future be more frequently performed than the radical.

Given a patient whose only symptoms are an ear discharge and dullness of hearing, I believe, in a great majority of cases, our better plan is to treat the case conservatively, only resorting to an operation after a faithful trial has been given to intelligent mild treatment, some cases that fail by these measures will then be cured by ossiculectomy, leaving only a very few that necessitate radical intervention.

Hamilton. W. C.

Obituary

Dr. T. R. Gates died at Caledonia, N.S., May 7th, in the forty-seventh year of his age. Dr. Gates contracted a cold which developed into pneumonia and death occurred very shortly afterwards. Dr. Gates, who was the son of the Reverend Laurence D. Gates, of Digby, leaves a widow and two children.

Dr. H. LeRoy Fuller died at his residence in Sweetsburg, Que., after an illness of about two years' duration. Dr. Fuller was born at Sweetsburg in January, 1840, where most of his life was spent, and where he practised for forty years. Dr. Fuller graduated as M.A. from Vermont University in 1861, and, for a few years, taught in the Dunham and Frelighsburg Academies. He then entered McGill University, where he received his medical training; he graduated as M.D. in 1870. During his long medical career Dr. Fuller was universally beloved and respected; his life was a full and active one and contained many interests. Municipal affairs, education, church, all were vital questions to him and in all he took a personal part. He was also surgeon of the 79th Batallion. Dr. Fuller was married twice and is survived by his widow, a son, Dr. G. H. L. Fuller, of Cowansville, and one daughter.

Dr. F. W. Seifert, of Quebec, died at Forcados, West Africa, on April 24th. Dr. Seifert was a graduate of McGill University. After graduating in 1905, Dr. Seifert accepted the position of medical officer on a boat sailing from England to the Gold Coast.

Dr. R. Senecal died at Rivière Ouelle, Que., in the twenty-eighth year of his age.

Dr. John M. Stewart, of Chesley, Ont., died May 26th. Dr. Stewart was a native of Kingston, and a graduate of Queen's University. For over thirty years Dr. Stewart had practised in Chesley, where his ability, kindness of heart, and generosity had gained for him the respect and affection of the entire community. Dr. Stewart combined with his professional work a keen interest in public and civic affairs. About five years ago Dr. Stewart became afflicted with cardiac trouble and his death ensued after a long and trying illness.

Dr. Johnston, of Merrickville, died from pneumonia, May 29th. Dr. Johnston was a prominent mason and a member of the Maitland Chapter of North Augusta.

Dr. T. D. White, son of the late Thomas White of Brantford, died at Nepigon. Dr. White was a physician on the Grand Trunk Pacific Railway.

Dr. Daniel Clark, of Toronto, died June 5th, in the eighty-second year of his age. Dr. Clark was one of the most prominent specialists in the treatment of mental diseases on the American continent, and for thirty years was superintendent of the provincial hospital for the insane. Dr. Clark was an entertaining speaker and writer, and was gifted with a fluent style, a good memory, and a keen sense of humour.

Dr. Norman F. Cunningham, of Dartmouth, died June 1st. Dr. Cunningham, who was in his sixty-fourth year, was one of the best known physicians in Nova Scotia, and had practised in Dartmouth for thirty years. Dr. Cunningham was born in Antigonish, and received his early education in that town at the St. Francis Xavier College; he afterwards entered Dalhousie University, where he took the honour prize in anatomy. He then went to Bellevue College, New York, from which institution he graduated with the highest honours. For many years Dr. Cunningham was connected with the medical instruction in the province of Nova Scotia, being president of the old medical college and, later, professor of medicine in Dalhousie University. A brilliant practitioner, gifted with a keen intellect, good common sense, and an unceasing fund of humour, Dr. Cunningham was always ready to serve his country and the town of his adoption, and, in the course of a busy life, he filled many important positions, both civic and social. Dr. Cunningham will long be remembered with affection by both patients and pupils; and his poorer patients will not forget the help and consideration—often gratuitous—that he was ever ready to give them. Dr. Cunningham is survived by a widow, one son, and two daughters.

A much lamented victim of the *Titanic* wreck was Dr. Alfred Pain, a son of Captain Pain, of Hamilton. Dr. Pain graduated from the University of Toronto in 1910 and spent a year as house-surgeon in Hamilton City Hospital. Immediately upon the expiration of his term he proceeded to London, where he spent about ten months. He was unfortunate enough to book his return passage on the ill-fated vessel.

Dr. William Duncan McNab, of Toronto, died May 14th, 1912, in the fifty-third year of his age. Dr. McNab was the third son of Mr. John McNab, Q.C.

Dr. Beverley MacMonagle, of San Francisco, died in Paris, May 22nd. Dr. MacMonagle was a native of Moncton, N.B., and practised in Sussex for some time before going to San Francisco.

Dr. Royal McShea died at Chapman, Kansas, April 7th. Dr. McShea was born in Belleville, Ont., in 1838. Dr. McShea was a graduate of the medical school of the University of Michigan, and for forty-five years practised his profession, first in Onvaneco, Ill., and later in Chapman, Kansas.

News

THE CANADIAN MEDICAL ASSOCIATION, ANNUAL MEETING EDMONTON, AUGUST 10TH, 12TH, 13TH, 14TH.

Provisional Programme

On the first Saturday, August 10th, the morning will be devoted to registration of members and payment of fees. At 2 p.m. there will be a general meeting at which the president elect, Dr. H. G. Mackid, will be installed. Following this will come the address of welcome by Lieutenant-Governor Bulyea, Major Armstrong, and others, and the report of chairman of committee on arrangements. At 4 p.m. there will be an automobile tour of the city for the visiting members. For the following day, Sunday, arrangements are being made for addresses in the leading churches on public health matters by prominent members or visiting delegates.

On Monday, August 12th, the various sections will meet for the scientific work of the meeting. At 2 p.m. there will be a general meeting of all sections, at which Dr. H. G. Mackid will deliver the presidential address. This will be followed by the address in surgery which will be given by Dr. A. E. Giles, of London, Eng. In the evening there will be a smoker.

On Tuesday, August 13th, the section meetings will continue all day. In the evening there will be given a public lecture by Dr. Adami, of Montreal, which will be followed by a public reception. Dr. A. D. Blackader, of Montreal, will give the address in medicine.

On August 14th, the work of the sections will cease at 11 a.m., and the members will combine in a general meeting for the election of officers. This will mark the close of the meeting proper. In the evening the members will be entertained by the Edmonton Exhibition Association.

The scientific programme promises to be an interesting one. A list of the papers promised is here appended.

SECTION OF MEDICINE. Papers have been promised as follows: Dr. J. A. McArthur, Victoria, B.C.: "Obesity." Dr. F. G. Finley, Montreal: "Typhoid pleurisy." Dr. Hodgson, Waukesha, Wisconsin: "Diabetes."

Dr. Edward Ryan, of Kingston, Ont., Dr. C. F. Martin, Montreal, and others, have promised papers of which the titles have not been announced. Dr. B. D. Gillies, Vancouver: "Tubercular Meningitis." Dr. D. A. Shirres, Montreal: "Results of treating eighty-two cases of Tic Douloureux, by deep injections of alcohol." Dr. Hamilton, Montreal. "The heart during and after infectious diseases."

SECTION OF SURGERY. Papers have been promised as follows: (1) Drs. J. E. Lehmann and Evans, Winnipeg: "A new method of treatment of habitual dislocation of the shoulder joint." (2) Dr. H. M. Speechley, Pilot Mound, Manitoba: "Successful extraction of two inch nail from child's right bronchus after one year." (3) Dr. J. W. Thomson, Vancouver: "Administration of anæsthetics." (4) Dr. R. E. McKechnie, Vancouver: "Operative treatment of fractures." (5) Dr. G. V. Lockett, Vancouver: "*x*-ray diagnosis." (6) Dr. J. M. Elder, Montreal: "Surgery of stomach—a clinical study." (7) Dr. A. Mackinnon, Guelph: "Injuries of abdomen without external wound." (8) Dr. H. P. Galloway: "Management of old un-united fractures of the femur." (9) Dr. H. Primrose, Toronto: "Tumours of breast, with special reference to malignancy." (10) Dr. W. Webster, Winnipeg: "Shock and its treatment." Dr. Edward Archibald: "Chronic pancreatitis: a clinical study.

Papers have also been promised, titles not yet announced, from the following: Dr. Jasper Halpenny, Winnipeg. Dr. G. A. Bingham, Toronto; Dr. G. E. Armstrong, Montreal; Dr. F. J. Shepherd, Montreal; Dr. A. S. Shillington, Ottawa; Dr. Coffee, Portland, Oregon; Dr. E. A. Rich, Tacoma, Washington; Dr. Park, Weed Willes, Seattle, Washington.

SECTIONS OF PATHOLOGY AND PREVENTIVE MEDICINE. (1) Dr. J. L. Todd, Montreal: "Flies versus Health." (2) Dr. H. W. Hill, Minnesota State Board of Health: "Infectious diseases—facts, fallacies, and speculations." (3) Dr. Helen MacMurchy, Toronto: "Infant mortality." (4) Dr. C. H. Vrooman, Kamloops, B.C.: "Tuberculosis— two hundred consecutive cases." (5) Dr. C. J. Hastings, M.H.O., Toronto: "The control of communicable diseases." (6) Dr. D. G. Revell, Edmonton,: "Medico-legal exhibits and notes." (7) Dr. T. H. Whitelaw, Edmonton: "Control of small-pox."

Papers have also been promised from: Dr. Mosher, Calgary; Dr. McGregor, London, Ont.; Drs. Wilson and McCarthy, Rochester, Minnesota; Major Lorne Drum, Ottawa; Dr. Jamieson, Edmonton, and Dr. D. D. MacTaggart: "The Coroner's Court in Canada."

OBSTETRICS AND GYNÆCOLOGY. (1) Dr. A. H. Wright, Toronto: "Puerperal Septicæmia." (2) Dr. R. A. Wright, Saskatoon, Sask.: "Spontaneous rupture of a four and a half months gravid bi-cornuate uterus." (3) Dr. F. W. Braasch, Rochester, U.S.A.: "Genito-urinary surgery."

EYE, EAR, NOSE AND THROAT. (1) Dr. R. A. Reeve, Toronto: "Possibly abnormal conditions in apparently normal eyes." (2) Dr. Good, Winnipeg: "Glaucoma." (3) Dr. J. W. Courtney, Ottawa, Dr. Glen Campbell, Vancouver, and Dr. Hackney, Calgary, have also promised papers, the titles to be given later.

Mr. M. J. Sturm, hospital architect, Chicago, will deliver an illustrated public lecture during the convention on: "The economies of hospital planning and management."

The entertainment committee is arranging a programme of entertainment, and a ladies' committee is being formed to look after the entertainment of the wives of members, and other lady visitors. This will include autombile drives, river trips by steamboat, and garden parties, one of which will be given at the university.

More complete information will be furnished before the date of meeting, by a circular containing the programme and other information, which will be mailed to medical men throughout the Dominion.

McGILL UNIVERSITY

The following is the list of honours and of those who have been accorded degrees by McGill University:

Holmes' Gold Medal for highest aggregate in all subjects forming the Medical Curriculum: F. H. MacKay, Mount Stewart, P.E.I.

Final Prize for highest aggregate in the Fifth Year Subjects: A. P. Davies, Hull.

Wood Gold Medal for best examination in all the Clinical Branches: D. S. Lewis, M.Sc., Montreal.

McGill Medical Society Senior Prize: First, A. J. Hebert, Shawinigan Falls; Second, E. C. Levine, Montreal.

Honours in Aggregate of all Subjects: 1st, F. H. MacKay; 2nd, A. P. Davies; 3rd, D. S. Lewis, M.Sc.; 4th, W. R. Stone.

Medicine: 1st, F. H. MacKay; 2nd, A. P. Davies; 3rd, D. S. Lewis, M.Sc.; 4th, L. G. Houle; J. S. Macleod; 6th, H. C. Steeves, B.A.; L. P. MacHaffie; 8th, W. R. Stone; 9th, Paul Ewert, A.B.

Surgery: 1st, F. H. MacKay; 2nd, J. W. MacNutt; 3rd, R. W. Digby.

Obstetrics: 1st, W. R. Stone; 2nd, F. H. MacKay; 3rd, L. W. MacNutt; M. W. Thomas; 5th, F. S. Swaine, B.A.; 6th, A. B. Walter; 7th, J. S. Jenkins; 8th, R. W. Digby; D. S. Lewis, M.Sc.

Gynæcology: 1st, F. H. MacKay; 2nd, A. P. Davies; 3rd, L. G. Houle; 4th, L. L. Derby; 5th, D. S. Lewis, M.Sc.; L. P. MacHaffie; 7th, H. H. Planche; W. R. Stone; 9th, A. J. Hebert, C. H. McCreary; 11th, L. W. MacNutt, T. W. Sutherland; 13th, J. J. Rosenbaum.

Oto-Laryngology: 1st, L. H. McKim; 2nd, D. S. Lewis, M.Sc., L. P. MacHaffie, P. G. Mulloy; 5th, F. E. Draper; 6th, W. R. Stone; 7th, Paul Ewert, A.B., D. L. MacDonald, B.A., J. S. MacLeod; 10th, D. F. D. Freeze, F. H. MacKay, J. R. Oulton, B.A., A. B. Walter.

Ophthalmology: 1st, D. S. Lewis, M.Sc.; 2nd, M. W. Thomas; 3rd, A. J. Hebert; 4th, D. F. D. Freeze, F. H. MacKay; 6th, R. W. Digby, L. W. MacNutt, T. W. Sutherland, E. J. O'N. Walcott; 10th, Samuel Brown, J. R. Oulton, B.A., A. V. Webster.

Pathology: 1st, F. H. MacKay; 2nd, A. P. Davies; 3rd, L. G. Houle, 4th, E. J. O'N. Walcott; 5th, L. W. MacNutt, A. V. Webster; 7th, J. S. Macleod, A. B. Walter; 9th, D. S. Lewis, M.Sc., D. L. MacDonald, B.A., L. H. McKim; 12th, A. L. Hebert,

L. P. MacHaffie, J. R. Oulton, B.A., H. H. Planche, H. C. Steeves, B.A., F. S. Swaine, B.A.; 18th, C. H. McCreary, L. T. McNulty; 20th, S. G. Beck, B.Sc., R. W. Digby, F. E. Draper, Paul Ewert, A.B., D. F. D. Freeze, J. S. Jenkins, J. W. Stewart.

The following is the pass list.:

S. G. Beck, B.Sc., Hecktown, Pa.; C. R. Bourne, Mount Tolmie, Victoria; Samuel Brown, Hallville, Ont.; J. W. Crawford, Courtenay, B.C.; A. P. Davies, Hull; L. L. Derby, Plantagenet, Ont.; H. R. Derome, Montreal; R. W. Digby, Brantford; H. T. Douglas, Montreal; F. E. Draper, Montreal; Paul Ewert, A.B., Gretna, Man.; D. F. D. Freeze, Sussex, N.B.; H. G. Furlong, Norwich; F. L. Gregory, Fairville, Me.; J. Harrison, B.A., Georgetown, Demerara; A. J. B. Hebert, Shawinigan Falls; L. G. Houle, Charlottetown; J. S. Jenkins, Charlottetown; S. G. Kean, M.D., Brookfield, Nfld.; Joseph Kolber, Montreal; D. S. Lewis, M.Sc., Montreal; D. L. MacDonald, B.A., Calgary; L. P. MacHaffie, Cornwall; F. H. MacKay, Mount Stewart; J. S. Macleod, Charlottetown; L. W. MacNutt, Charlottetown; C. H. McCreary, Morrisburg, Ont.; L. H. McKim, Wallace Bridge, N.S.; W. H. McMillan, Brockville; R. S. Miller, M.D., Demerara; P. G. Mulloy, Inkerman, Ont.; J. R. Oultin, B.A., Lorneville, N.S. H. H. Planche, Cookshire; G. Stuart Ramsey, Quebec; H. R. Robert, Au Sable Forks, N.Y.; J. J. Rosenbaum, Montreal; H. C. Steeves, B.A., Hillsborough, N.B.; J. W. Stewart, Hampstead, Ont.; W. R. Stone, Vancouver; T. W. Sutherland, Saskatoon; F. S. Swaine, B.A., N. E. Harbour, N.S.; M. W. Thomas, Victoria; E. J. O'N. Walcott, Christ Church, Barbadoes; Irwin Wallace, Belleville; A. B. Walter, Salt Spring Island, B.C.; A. V. Webster, Marie, P.E.I.

In addition to the above, Messrs T. A. Briggs, A. N. Foster, A. B. Hawkins and L. T. McNulty, have passed in all subjects of the final year with the exception of medicine and clinical medicine. They will be granted a supplemental examination in this subject in September.

Five hundred thousand dollars have been bequeathed to the Montreal General Hospital by the late John Torrance Van Neck, who died at Cannes, France, on February 22nd, 1912.

In the annual report of the Protestant Orphans' Home at Toronto, the secretary states that the standard of health of the children admitted to the home is much lower than it was formerly. Most of these children were born in Great Britain or Ireland. The thought it suggested is that a closer supervision at the ports of entry might improve these conditions.

THE annual meeting of the Prince County Medical Society was held at Summerside, May 30th. On this occasion, a new code of by-laws and regulations for the government of the Prince County Hospital was drawn up. A copy is to be sent to all the medical men in the county for endorsement.

DR. P. J. MCDONALD, of Little Current, has been appointed physician to the Indians of Sucker Creek, Sheguiandah, and Birch Island.

THE thirteenth annual meeting of the American Therapeutic Society was held in Montreal on June 1st, under the presidency of Dr. A. D. Blackader. This is the first time the society has met in Canada.

DR. DAVIS, resident physician of the Six Nations reserve, has been appointed medical superintendent at an annual salary of three thousand one hundred dollars.

SCARLET fever is very prevalent in St. John's, Newfoundland.

AT a meeting of the Dunnville Board of Health, which took place May 23rd, it was decided that measures should be taken to improve the sanitary conditions of the town, and that an attempt to exterminate the house fly should be made.

THE report of the medical health officer for Toronto shows that during 1911, the death rate from typhoid fever was only one-half as great as that for 1910. During the month of April, 1912, only seven cases of the disease had been reported.

MEASLES has again broken out in Hamilton, and one hundred and sixty-three cases have been reported. There have also been reported, eight cases of mumps, three cases of scarlet fever, one case of diphtheria, four cases of chicken-pox, and ten cases of whooping cough.

THE report of the medical superintendent of the Nova Scotia provincial sanitarium for the treatment of tuberculosis shows that during the year 1910-1911 fifty-five patients were treated; of these thirty-nine were discharged, ninety-eight per cent. of which were apparently cured, disease arrested, or improved. Tuberculin has been given to a number of the patients, and it has been found that most cases show a distinct improvement and are less liable to relapse than are those to whom it has not been administered. It has been deemed advisable to reject far-advanced cases of the disease; it is considered best that such cases should go to the hospitals, and that the sanatorium should receive only those cases in which it is thought that a probable cure may be effected. Several alterations are to be made in the buildings of the institution; and two open-air pavilions are to be erected on either side of the main building. When the proposed changes are completed, it is hoped that sufficient accommodation for fifty patients will be provided. A plea is made for the erection of a recreation pavilion and a small workshop, in which patients may indulge in healthful exercise and employment.

NINE cases of small-pox are reported from Toronto, and four cases of the disease are under treatment at the Montreal Civic Hospital. One case has been reported from Kincardine.

A NEW wing is to be added to the General Public Hospital, St. John, N.B.; the estimated cost is thirty thousand dollars.

AN isolation hospital is to be established at Virden, Man.

THE Union and Comox District Hospital at Cumberland, B.C., is to be enlarged; the plans for an isolation hospital are also in course of preparation.

IT has been decided to erect a hospital on the high ground overlooking Porcupine Lake; the site chosen is conveniently near South Porcupine and Golden City. Timmins is to have a hospital of its own, to be situated near Pearl Lake.

THE plans for a temporary isolation hospital at Edmonton were recently submitted to the medical health officer. The building is to be erected immediately to the rear of the permanent building which is in course of construction. The temporary building will accommodate twenty-five patients, and will be used in the place of the hospital which was destroyed by fire some months ago. When the permanent hospital building is completed, this temporary structure will be removed to a more isolated site and will then be used only for cases of small-pox.

The report of the medical health officer for Edmonton shows that during the month of March, two hundred and ninety-one cases of infectious disease occurred in that city. Of these, two hundred and eighteen were measles and twenty-five were small-pox. Fifty-eight cases were treated at the isolation hospital; one death occurred.

The late Dr. Clemesha has bequeathed ten thousand dollars to be used as a maintenance fund for a hospital to be erected at Port Hope, provided the hospital is built within ten years from the date of his death. By the will of the late John Helm, a further sum of twenty thousand dollars is bequeathed to the hospital, should it be established at Port Hope. It is proposed to proceed at once with the erection of a local hospital.

The building of the Victoria Hospital at London, Ont., is to be remodelled. An additional storey is to be added and a roof garden provided, where the patients, the majority of whom are suffering from tuberculosis, may get fresh air and exercise. To do this, the hospital trust has promised to provide ten thousand dollars and the city council has agreed to add fifteen thousand dollars to this amount. The sum of four thousand eight hundred and fifty dollars has already been subscribed towards the ten thousand dollars required. The city council has also agreed to expend the sum of seventeen thousand five hundred dollars on improvements to be made to the east wing of the hospital.

An epidemic of diphtheria has broken out in Blumpnhof, a small village in Saskatchewan. Most of the cases are children, among whom several deaths have occurred. Measures to prevent a further spread of the disease are being taken by Dr. Wilson, of Regina, assisted by Dr. Kelly. Several cases of diphtheria have also occurred at Vancouver. It is proposed to erect an additional building, in connexion with the Vancouver General Hospital, for the treatment of cases of this disease.

Fifty-five cases of small-pox have been treated in Edmonton since the commencement of the present year. The last case was discharged on Saturday, May 25th.

SEVERAL cases of small-pox are reported from Woodstock, Ont. Five of these cases are from one household. It is feared that many may have contracted the disease.

SEVERAL deaths from diphtheria have occurred at Lac-du-Bonnet, Man.

THE government of Ontario has purchased the Barriger Farm for the Eastern Hospital at Brockville.

CASES of small-pox are still reported from Toronto. A young woman was found to be suffering from a mild form of small-pox; in the same house were ten other women. All were immediately quarantined and vaccinated. The woman suffering from the disease had never been vaccinated. Another case reported is that of a woman of sixty-six years of age, who, it is stated, contracted the disease through the visits of two girls living in the house in which the case first mentioned was discovered.

Two further cases of small-pox have been reported from Moose Jaw.

ACCORDING to the Collingwood *News*, four children died within a week, at Owen Sound, as a result of measles.

FROM the Regina *Leader*, it appears that the epidemic of measles in Regina is spreading. The chief difficulty appears to lie in the fact that cases of the disease are not reported sufficiently early to prevent contagion. So far, no deaths have been reported.

TWO cases of leprosy have been discovered in Montreal, both cases are Chinamen.

AN epidemic of scarletina is reported from Brockville.

SCARLET fever is very prevalent in Halifax, and several cases of the disease have occurred at Dartmouth. The disease is also reported from Kincardine.

AN outbreak of small-pox has occurred at Deer Island, N.B., where seven cases have been reported. A strict quarantine has been established under the direction of Dr. E. B. Fisher, secretary of the provincial board of health.

At the regular meeting of the Victoria hospital trust of London, Ont., which took place May 15th, Dr. Ernal Bice, was appointed house surgeon until October 31st next. The superintendent reported that, during the month of April, one hundred and forty-seven patients had been admitted to the hospital; sixty-three men, one hundred women, and forty-three children had been discharged; and eight births and seventeen deaths had occurred. The cash receipts for the month amounted to three thousand eight hundred and seventy dollars, while accounts amounting to eight thousand seven hundred and sixty-two dollars were passed. It is proposed to make an appeal for funds in order to enlarge the hospital; this question will probably be taken up at the next meeting.

The seven health districts into which the province of Ontario has been divided are: London, Palmerston, Hamilton Peterborough, Kingston, North Bay, and Fort William. The following regulations have been adopted by the provincial board of health:

1. Every district officer of health shall, as a condition of his appointment, attend the course of instruction in public health and pass the examination prescribed by the University of Toronto or such other university as may be designated by the lieutenant-governor-in-council.

2. Every district officer of health shall reside in the respective headquarters designated by the lieutenant-governor-in-council.

3. Every district officer shall devote his whole time to public health work in the district for which he is appointed, or in any part of Ontario where he may be required to do so by the board. He shall not engage in private practice.

4. Every district officer of health shall be paid an annual salary of $2,500 and his actual and necessary travelling and other expenses incurred in the discharge of his duties.

5. Every district officer shall enforce the Public Health Act, the regulations, and any other Act or regulations respecting the health of the inhabitants of the district, or their protection from communicable disease, and generally do within the district anything which a member of the provinical board of health, medical officer of health, or sanitary inspector is authorized to or required to do under the Public Health Act.

6. Every district officer shall act under the supervision and control of the board, and shall report to it daily, and shall in such report give such information as may be required by the board or by the regulations.

Victoria is badly in need of a new hospital. At a mass meeting of the Women's Auxiliary of the Provincial Royal Jubilee Hospital, which took place on May 10th, Dr. Robertson stated that the present hospital was not only inadequate, but quite obsolete. The present buildings do not admit of enlargement, and a campaign for funds with which to erect a new hospital has been commenced; it is hoped, ultimately, to collect the sum of three hundred thousand dollars for this purpose.

A by-law is to be submitted to the people of Renfrew to grant the sum of ten thousand dollars towards the amount necessary to make some additions to the Victoria Hospital. One thousand dollars of this amount is to be devoted to the erection of an isolation hospital.

An addition is to be made to the St. Mary's Hospital at New Westminster. The estimated cost is about fifteen thousand dollars.

The regular meeting of the Edmonton Hospital Board took place on May 9th. Some discussion arose as to what should be done with the old hospital building; it is thought probable that it will be sold or rented. We learn from the *Bulletin* that the nurses' home has been sold to the city to be used as a day nursery.

Mr. William McKay, has been appointed health inspector for Fredericton.

According to the *Royal Gazette* there are, at present, two hundred and sixty-three medical practitioners in the province of New Brunswick.

Measles was very prevalent in Fort William during the month of May, and many cases of the disease were reported from St. Joseph's orphanage. Several deaths have occurred at Owen Sound, as the result of a recent outbreak of the same disease.

A new ward has been added to St. Joseph's Hospital, Peterborough. The ward comprises two rooms, one of which is intended for boy patients, while the other is intended for girl patients.

The new hospital to be erected at Port Hope is to be situated at the corner of Hope and Ward streets. The property, which was valued at five thousand dollars, belonged to Mr. James, who has donated one thousand dollars in cash to the hospital, thus making the net price of the site chosen four thousand dollars.

THE monthly meeting of the Fredericton Hospital Board took place on May 6th, under the presidency of Hon. Judge Barry. During the month of April forty patients were treated at the hospital, fourteen of which were surgical cases. Five deaths occurred.

ON Monday evening, May 6th, the formal opening of the Toronto Graduate Nurses Club, at 295 Sherbourne Street, took place. The building, the lease of which was presented by Mr. John Ross Robertson, fulfils the purposes of a club for graduates of recognized institutions and, at the same time, provides a headquarters for a central registry, including a list of four hundred and seven nurses.

THE Inter-Urban Clinical Club, comprising members from Cleveland, Pittsburg, and Toronto, met in Toronto in May.

A NEW children's hospital is to be erected at Hamilton, which is to provide accommodation for thirty beds. The cost is estimated at thirty thousand dollars, or one thousand dollars for each bed provided.

DR. WILLIAMS, of Aurora, Ont., has been appointed medical health officer for Whitchurch.

AN addition is to be made to the St. Joseph's Hospital at Chatham. The building will be three stories high with basement, and each storey is to have a separate sun room and balcony. The cost is estimated at between twenty and twenty-five thousand dollars. A further addition to the hospital, to cost eight thousand dollars, is anticipated.

GODERICH is to have a new hospital; the site has already been purchased and it is proposed to submit a by-law to the ratepayers with the purpose of obtaining funds for the erection of the building.

DR. F. J. EWING, of Vancouver, who is in charge of the medical hospital service of the Grand Trunk Pacific Railway, reports that, on his recent visit of inspection to the Yellowhead Pass district, he found the health of the men in the construction camps there to be excellent and that there were no cases of infectious disease. A large hospital has now been established thirty miles west of the summit of the Rockies; others are to be established at Smithers and at Fort George. Hospitals are also to be founded and fully equipped at Government Ranch, thirty-five miles east of Aldermere, Burns Lake, and Fraser Lake.

TWENTY cases of measles are reported from Dawson, Yukon. There are also several cases of chicken-pox and one or two cases of typhoid fever. We learn from the *News* that no quarantine is being enforced against either measles or chicken-pox. The only precaution is the posting of a notice on the doors of infected houses warning people not to enter them; we understand, however, that the inmates of these houses are allowed to mix with the community and thus spread the infection.

THE General Hospital at Regina is to be extended at an estimated cost of seventy-five thousand dollars.

IT is hoped that the Orangeville Hospital will be completed very soon, and that it will be possible to formally open the building some time during the present month.

SIX deaths have occurred, as the result of an epidemic of measles, among the Indians of Port Simpson, and in the Tsimpsean camps, British Columbia. Many cases of the disease have occurred also among the white people living near the reserve.

THE Winnipeg Sanitarium was formally opened on May 6th. The sanitarium, which is situated at Elmwood, is intended for the treatment of patients suffering from nervous diseases; the need for some such institution has long been felt in Winnipeg; the erection of the present institution is due, in large measure, to the efforts of Dr. Carscallen.

DR. MCKEE has been appointed municipal bacteriologist for South Vancouver.

THE report of the medical officer for the month of April shows that, in South Vancouver, seven cases of diphtheria occurred, forty-four cases of measles, two cases of scarlet fever, and two cases of whooping cough.

TENTATIVE plans for the erection of a hospital at New Westminster were submitted and approved at a meeting of the city council and board of management of the Royal Columbian Hospital, which took place May 2nd. It is expected that the hospital building will cost about two hundred and twenty-five thousand dollars. A grant of seventy thousand dollars has been made by the provincial government.

THE sum of ten thousand dollars has been added to the provincial grant to the Kootenay Lake General Hospital. A sum not exceeding forty thousand dollars was promised by the provincial authorities towards the hospital, on the condition that the citizens of Nelson subscribed an equal amount. The citizens have now subscribed fifty thousand dollars and the provincial government has generously increased its donation.

FOUR thousand eight hundred and fifty dollars have been collected by the hospital trust of London, Ont., towards the ten thousand dollars required to enlarge the hospital for malignant diseases. A portion of the proposed new building is to be reserved for patients suffering from tuberculosis.

THE formal opening of the Mountain View Hospital at Westport, Ont., took place May 8th, 1912.

Canadian Literature

ORIGINAL COMMUNICATIONS

The Canadian Journal of Medicine and Surgery, June, 1912:

Improvised Methods in the Field .	Major J. T. Clarke.
Anæsthetic "Don'ts" . . .	Rachel R. Todd.

Dominion Medical Monthly, June, 1912:

Personal recollections of Lord Lister .	F. LeM. Grassett.
Remarks on Eczema, with special reference to its Ætiology . . .	Graham Chambers.

L'Union Médicale du Canada, May, 1912:

Un cas de syphilis maligne	Gustave Archambault.
Un cas de spina bifida	Dr. Laporte.

The Canadian Practitioner and Review, May, 1912:

Cholelithiasis	W. J. Macdonald.
Personal recollections of Lord Lister	John Stewart.

Public Health Journal, May, 1912:

What is being done outside of the dental office for the improvement of the human mouth	Arthur Day.
Sanitation and hygiene in Newfoundland and Labrador	A. W. Wakefield.
Relationship of the Medical Practitioner to Public Health	C. A. Hodgetts.
Memoranda concerning vaccination in the prophylaxis of Typhoid Fever	W. S. Magill.

Dominion Medical Monthly, May, 1912:

Dental prophylaxis in children	J. A. Bothwell.

Medical Societies

MANITOBA MEDICAL ASSOCIATION

The Manitoba Medical Association held its annual meeting in Winnipeg, May 21st and 22nd, when a clinical programme throughout was presented. This was the first time the association departed from the customary programme with formal papers. Judging from the success of the venture, it will be repeated when the meeting is next held in a centre large enough to provide sufficient clinical material. The discussions throughout were keen and spirited. The following is the programme: B. J. Brandson: (1) Tubercular syphilide; (2) Valkman's ischemic paralysis; R. F. Park: Valkman's ischemic paralysis; J. E. Coulter: Valkman's ischemic paralysis; C. Hunter: (1) Chorœa; (2) Exophthalmic goitre; (3) Neurasthenia; E. W. Montgomery: (1) Functional renal test; (2) Arterio-sclerosis with gangrene of the toes; N. J. McLean: (1) Sarcoma of ovary and bowel (specimen only); (2) Tubercular kidney; H. P. H. Galloway: Extensive ankylosis following septicæmia; Fred. A. Young: three cases of syphilis; Roy J. Martin: Imperforate anus in a child a year old; R. G. Montgomery: Duodenal ulcer treated by gastro-enterostomy; Prof. Evatt and J. E. Lehmann: new operation for frequent dislocation of the shoulder joint; R. B. Mitchell: case of frequent dislocation of the shoulder joint treated by operation; Jas. McKenty: (1) Two cases of carcinoma of the stomach treated by gastro-enterostomy; (2) Cleft palate; (3) Abscess of brain (specimen only); F. Lachance: (1) Two cases of pus tubes; (2) Urethral transplantation for old injury to ureter (N. J. McLean's case); (3) Two cases of osteomyelitis; D. F. McIntyre: Hodgkin's disease; C. E. Johnston: Cancer of the tongue; S. Alwyn Smith: (1) Cervical caries; (2) Dorsal caries; (3) Lumbar caries; (4) Rachitic kyphosis; (5) Generalized rickets with knock knees, genu recurvatum, scoliosis, and beading of the cartilages of the ribs; (6) Hæmophylic knee joint; (7) Tubercular knee; (8) Two cases of Valkman's ischemic paralysis; (9) Lateral Duchenne palsy; Mary Crawford: Leukoderma; R. F. Park: Infantilism due to pancreatic insufficiency; John Tees: Infant feeding. T. Glen Hamilton, Fred. A. Young, O. Dorman, and R. R. Swan presented a series of cases of phthisis pulmonalis for examination.

On the morning of the 23rd, operative clinics were held at the Children's Hospital, St. Boniface, and at the General Hospital. At the latter institution S. J. S. Peirce also gave a demonstration of intravenous injection of salvarsan.

On the evening of May 21st, a large public meeting was addressed by Dr. J. R. Jones.

The following are the officers for next year: President, J. S. Matheson, Brandon; 1st vice-president, S. C. Bier, Brandon; 2nd vice-president, T. R. Ponton, Macgregor; honorary secretary, Jasper Halpenny, Winnipeg; honorary treasurer, Robert F. Park; executive committee: A. E. Walkey, Portage La Prairie; W. Biglow, Brandon; Jas. McKenty, Winnipeg; R. D. Ferguson, Pilot Mound; W. J. Harrington, Dauphin.

The meeting next year will be held in Brandon.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

The fourteenth regular meeting of the society was held Friday, April 26th, 1912, Dr. D. J. Evans in the chair.

Pathological Specimens: Dr. A. H. MacCordick.

1. Liver showing early fatty cirrhosis. Patient was a man aged thirty-four with a marked alcoholic history. He died of double lobar pneumonia. The specimen shows the early stage of the disease of the liver.

2. Liver showing atrophic cirrhosis in which the condition has gone on to contraction of the connective tissue.

3. Liver with biliary cirrhosis, in which the common duct was obstructed for eleven months.

4. This specimen represents a common condition and yet this one gave uncommon symptoms. The man had definite evidence of empyæmia on the right side but repeated tappings revealed no fluid. It shows a localized pyæmia partly at the base of the right lung and extending upward anteriorly to the fourth rib, at which point the fluid pressed on the right auricle, obliterating its cavity and causing the most intense cyanosis before death. About 500 c.c. of fluid were found in the cavity.

Case Report: Unusual complications of scarlet fever. Dr. J. McCrae. The first complication is one I have never seen previously, nor seen described, viz., a case of "tender toes" following scarlet fever. The patient was a young man of twenty and had the ordinary five or six days of comparatively light fever; about the time that the fever ceased he complained that his previous night's rest had been disturbed on account of pain in his toes. I found on examination nothing particular save that the little toe and that next to it on the left foot were extremely tender. No visible evidence of inflammation existed. To touch them gave the same tenderness that we are familiar with in the toes of typhoid fever. The pressure of the bed clothes was distinctly irritating. The neuritis passed off in about forty-eight hours. I further mention the peculiar localization in two cases of the secondary suppuration which is so comparatively frequent in lymph nodes. Ordinarily, the submaxillary lymph nodes are the ones affected. The first was a severe septic case, and, as usually happens, a few days after the worst of the conditions had gone by, pain and swelling in the face was observed and a definite lymphadenitis existed. This was, however, situated as far above the edge of the lower jaw as the submaxillary is below, and about the same level; it was incised. It seemed to be a metastasis in some of the small periarticular or perivascular lymph collections as the seat of the infection.

The other is a case which is still in the hospital and the suppuration occurred exactly in front of the thyroid cartilage. The post cervical gland had become much enlarged and tender. This swelling was quite large, from one to one and a half inches in diameter, and proved to contain pus. Much as I am tempted to suppose that this is a condition of acute suppurative thyroiditis, such as occurs in the case of pneumonia, I fear it is more likely to be a localized, subcutaneous or perivascular lymph collection which happened to be in close continuity to the thyroid gland; and that if the thyroid gland be infected, and as far as one can judge it is, it must be only a secondary infection. The excellent condition of the child precludes the likelihood of determining more accurately in the future.

PAPER: The bone marrow. A study from the standpoint of the clinical pathologist. (Lantern illustrations). Synopsis of paper: The kaleidoscope characters of marrow tissue. Practical utility of a study of the subject. Historical. Correlation of blood-cell counts with marrow-cell counts. Fallacies in interpretation. Technique. Description of the cellular element of the bone marrow with special reference to modern investigations into the life history, phenomena of degeneration, autolysis and death of the different cells. A series of marrow pictures, illustrative of the main changes met with in practice. The interpretation of these pictures by the aid of special charting, and an extension of the Arneth doctrine to all members of the genealogical tree of blood-cells. Guides to diagnosis and prognosis summarized.

DISCUSSION: Dr. L. J. Rhea: Only those of us who have been called upon to study bone marrow really know how very confusing all the different cells are. It is not so difficult to recognize the mature cell, or the early embryonic type, but the intermediate cells are the difficult ones to place. This study has a definite bearing on the carrying out of a classification of tumours, especially in the group which we refer to as lymph adenoma. Until one is able to recognize the types of cells between the embryonic and the mature cells the classification of these will still be puzzling to most of us. It is largely through work such as Dr. Gruner has undertaken that this is possible. The amount of work involved in the preparation of this paper can only be appreciated by those of us who do laboratory work.

The fifteenth regular meeting of the society was held May 3rd, 1912, Dr. J. M. Elder, president, in the chair.

Living Cases: The Elliott and Herbert operations for glaucoma. Dr. W. G. M. Byers explained these operations and exhibited cases.

Demonstrations: 1. Cultures of spirochæte pallida, by Drs. R. P. Campbell, L. J. Rhea, and J. J. Ower. From the pathological laboratory of the Montreal General Hospital.

Two things are to be noted: first, it is a solid medium, and covered over by a layer of alboline and a stab running down through the centre, almost black from the growth of bacteria; radiating from this stab is a hazy cloud which consists largely of spirochæte pallida. It may be well to say in regard to this culture that for many years many attempts to grow the spirochæte pallida outside the body have been made but without marked success. They were grown in inspissated horse serum (Scherescrosky), but these spirochætes are still of a doubtful nature and never at any time were the observers able to inoculate animals, with one possible exception. Noguchi, working in the Rockefeller Institute, as early as July last, was able to grow it in more or less pure culture, and not only that, but was able to inoculate monkeys and also rabbits with the disease. We here tried to grow it, and first of all started with Noguchi's original method, which is very cumbersome and necessitated the use of a generator for hydrogen gas, which latter was allowed to bubble through the medium and surround it so that no air could gain access to it. We did not have much success with the original method but with the later modification of hydrocele agar under a layer of sterile alboline, we were able to grow them as shown to-night. Under the microscope you will see a number of spirochætes; they are not motile because they are held in the agar medium; outside of this, however, they show motion more or less marked.

2. A series of skiagrams by Dr. W. A. Wilkins: (1) Rheumatoid arthritis; (2) Fracture of the scaphoid bone; (3) Charcot's joint in very advanced stage (knee); (4) Hour-glass stomach; (5) Stricture of the œsophagus due to malignant disease; (6) A double bismuth meal; (7) Vertical fracture of the bodies of the fifth and sixth cervical vertebræ.

Pathological Specimens: Dr. O. C. Gruner. 1. Extensive tuberculous ulceration of the ileum. The patient is a woman aged fifty-five, who had complained for three months with symptoms of gall stones; an operation was performed for this which was satisfactorily recovered from. The patient returned two months later with the same symptoms and subsequently died. The intestine showed extensive ulceration. Each ulcer is of remarkable size, involving the whole circumference of the gut and extending three or four inches longitudinally. The ulcers are dysenteric in character, typhoidal in distribution, and tubercular in causation.

2. Organs from a case of acute leukæmia. The patient was a dentist, aged thirty-three, who had been ill for two weeks only. The first symptoms were abdominal pain, headache, and sore throat. Ten days before admission the gums were spongy and bled considerably; two or three days later there was extensive hæmorrhage under the skin, round the eyes, and over the lower extremities. There was blood in the urine. The temperature was only slightly raised. At autopsy the following conditions were found: The pericardium shows very numerous petechial hæmorrhages; the diaphragm a massive intra-muscular hæmorrhagic exudation; the spleen a characteristic homogeneity of structure; extremely fatty liver; greatly hypertrophied mesenteric glands with hæmorrhages.

Dr. Gruner also showed lantern slides demonstrating the condition of the blood, bone marrow, etc.

Discussion: Dr. J. M. Elder: I would like to ask with regard to the first case (the patient who was operated on for gall stones), were any gall stones found at operation? What about the mesenteric lymph nodes in this case? One would expect to find a considerable enlargement there. Further, is it in your experience, in doing post mortems, a common thing to find perforation as a result of tubercular ulcers of the bowel?

Dr. Pirie: I would like to ask Dr. Gruner if hæmorrhages, as found in the second case, are usually or often as extensive as in this case. Is it possible that on account of the extensive hæmorrhages the case ran such a short course? In general splenic leukæmia cases run a much longer course. Could one draw a prognosis from the extent of the hæmorrhage? I remember the case of a girl who had been ailing for some time and in whom a diagnosis was eventually made from an examination of her eyes, a hæmorrhage being found there. In another case a hæmorrhage lasted for hours as a result of having a tooth extracted. These two cases have shown no further evidence of hæmorrhage and have done well with x-ray treatment.

Dr. Gruner: In answer to Dr. Elder, I would say that the mesenteric glands were universally enlarged. I have seen perforation of tuberculous ulcers occur two or three times. Fifteen gall stones were found at operation. As to Dr. Pirie's remarks, the extent of the hæmorrhage was the chief feature of interest in this case. Acute leukæmias, however, are not always the same; clinically some have a special tendency and others are associated solely with glandular enlargement. The hæmorrhagic condition is not so much a prognostic sign as is the blood examination. A hæmorrhagic condition may signify a general infection.

Paper: Diastasis of the recti abdominalis, by Dr. F. W. Harvey. Synopsis: Conditions due to separation of the recti. Ventral hernia and enteroptosis. Causes of diastasis—pregnancy, tumour, etc. Treatment—operative, mechanical, and gymnastic. Case reports—illustrating treatment by gymnastics.

Discussion: Dr. W. M. Fisk: I would like to congratulate Dr. Harvey on the eminently practical paper he has given us, and I would like to ask how often he prescribes the exercises and for what length of time and how soon after confinement.

Dr. J. M. Elder: I would like to ask if I understood Dr. Harvey to say that the great difficulty was not so much in separation of the recti muscles, as in the absorption or weakening of the linea alba? I do not quite see that the two things are identical. If the linea alba holds, then the support must be good; and I still fail to see why, if you strengthen the rectus abdominis you thereby restore the linea alba.

Dr. F. W. Harvey: With regard to your question, I do not pretend that we can restore the linea alba, but what is intended by these exercises is to strengthen the recti muscles, so that they will to a certain extent take the place of the linea alba. In these cases of diastasis, if we can close up the opening by strengthening the recti muscles, they shorten and are straightened and take the place of the linea alba. With regard to the exercises, in cases where I find much diastasis, I have given the exercises about the sixth or seventh day after confinement, and if the condition is very extreme the patients are kept in bed for some weeks in the dorsal position with the body somewhat flexed so as to shorten the distance between the ensiform cartilage and the symphysis and the muscles gradually adapt themselves to that posture. I have instructed patients to take these exercises daily, perhaps twice a day, depending on the case, and at first in weak patients with the assistance of a nurse. With regard to the time diastasis occurs we are told that it occurs during pregnancy, the separation becomes very great during that time and may be increased during confinement. In extreme cases some form of support should be given during pregnancy. In two cases during labour I found the expulsive efforts of little avail making it necessary to apply forceps for delivery.

TORONTO ACADEMY OF MEDICINE

The annual meeting of the Toronto Academy of Medicine, held in the academy building, 13 Queen's Park, on May 7th, was largely attended.

During the evening reports were read by the president, secretary, treasurer, and the chairmen of the various sections and committees. From the general tenor of each report it was evident that the last year had been a most successful one from every standpoint. Since September, there have been seven general and thirty-nine sectional meetings, the latter being largely clinical in their nature. Besides excellent papers by fellows, addresses by outside men have been read as follows: Dr. C. N. B. Camac, of New York, on "The out-patient clinic, its aims and possibilities;" Dr. Thomas MacCrae, Johns Hopkins University, on "The management of circulatory conditions following acute febrile diseases;" John G. Clarke, professor of gynæcology, University of Pennsylvania, on "The surgical phases of enteroptosis;" Professor Richard M. Pearce, University of Pennsylvania, on "Medical research in American universities, its present needs and opportunities;" and Dr. Richard C. Cabot, Massachusetts General Hospital, on "Some points in differential diagnosis."

The financial condition of the academy is good. The library, with stack-room accommodation for twenty-five thousand volumes, has been increasingly valuable and its patronage by fellows widespread. The academy building is ample in size and permanent. At the conclusion of the academy year, the membership was three hundred and forty-eight, an increase of nineteen over the previous year. Dr. Powell, in his report, stated that among the most urgent needs of the academy was an auditorium with a seating capacity for about four hundred. This question would be dealt with in the near future.

Following the past president's address, Dr. R. A. Reeve was installed in office as president and spoke briefly. Votes of thanks were tendered to Dr. Powell for his unremitting industry while in office and to Mrs. Powell for the gift of a gavel.

The monthly meeting of the sections of medicine was held on April 9th, Dr. Chambers in the chair.

Dr. Goldwin Howland showed a case of dessiminated sclerosis having no symptoms of envolvement above the arm area. The arms were normal in strength and reflexes were normal. Knee jerk and achilles jerk were plus: no clonus; left toe reflex plus.

On the right side the knee jerk was absent. There was no loss of sensation, but some loss of power in the hamstrings on both sides. There was no bladder trouble but previously there was some evidence of spasticity. The lesion was dessiminated in the lumbar region and of two years standing. There was no history of syphilis and the Wassermann reaction was negative. The question of spinal tumour should be considered.

Dr. Rudolf showed a case of leprosy in a Chinese boy. He gave a history of an attack a year ago, which apparently cleared up. Dr. Rudolf also showed a case of malaria of the tertian type, which had lasted for weeks. Quinine given in ten grain doses before the attack was expected controlled the conditions. Dr. Ferguson, in discussion, spoke of the points for and against the contagiousness of leprosy. He thought it was contagious.

Dr. Geo. Strathy showed a child who had tuberculosis of the knee ten years ago. There was a maternal history of tuberculosis and a paternal one of syphilis. The child became deaf and developed interstitial keratitis. The Wassermann reaction was positive. Three months ago the child's mental condition was one of exaltation, but a month ago she became depressed. Recently she developed an antipathy for her grandmother and had delusions. There was a cell count of seventy in the spinal fluid. The knee jerk was present; the pupils reacted to light. The case was evidently one of general paresis.

Dr. Foster presented a case for diagnosis: An Italian, aged fifty-three. His pupils were irregular, the right larger. The knee jerk was lost on both sides, but the speech was not particularly affected nor was the ataxia pronounced. All laboratory findings were negative, i.e. Wassermann reactions on the blood and spinal fluid, and cell count, butyric acid and ammonium sulphate reactions on the spinal fluid.

Dr. Howland thought that despite the laboratory findings the case must be one of general paresis.

Dr. Chambers showed a case of heart block, first seen five years ago. The pulse was thirty-five and he had had convulsions. Last year he had general œdema and at that time the pulse was twenty-eight. There was a double aortic and a mitral systalic murmur. The polygraph tracings were not quite clear.

Nomination and election of officers for the ensuing year were then proceeded with and resulted as follows: chairman, Dr. H. B. Anderson; secretary, Dr. Frederick C. Harrison; editor, Dr. A. H. Rolph.

The officers of the council for 1912-13 are as follows: president, R. A. Reeve; vice-president, H. J. Hamilton; hon.-secretary, Harley Smith; hon.-treasurer, W. A. Young; past-president, R. A. Powell. The elective members of the council are: John Ferguson; H. A. Bruce; Edmund E. King; George Bingham; H. A. MacDonald; W. H. B. Aikens; Graham Chambers; J. H. Elliot.

The following officers of sections were elected:

State Medicine—Chairman, W. T. Addison; secretary, White; editor, Geo. Nasmith

Surgery—Chairman, Gideon Silverthorn; secretary, W. Warner Jones; editor, Geo. Ewart Wilson.

Pathology—Chairman, Prof. Leathes; secretary N. T. Maclaurin.

Medicine—Chairman, H. B. Anderson; secretary, Frederick Harrison.

Pædiatrics—Chairman, R. D. Rudolf; secretary, Geo. Boyer; editor, J. S. Graham.

Ophthalmology and Oto-laryngology—Chairman, Geoffrey Boyd; secretary, T. A. Davies; editor, F. C. Trebilcock.

LAMBTON MEDICAL ASSOCIATION

A meeting of the Lambton Medical Association was held at Thedford on Wednesday, May 8th. The following members were present: Dr. McDonald, of Sarnia, Drs. Newell and Kelly, of Watford; Drs. Reid and Kidd, of Wyoming; Dr. Brown, of Camlachie; Drs. Copeland and Huffmann, of Arkona; and Drs. Munns and Grant, of Thedford. An address was given on "Practice in the early days," by Dr. Munns, and papers were read by Dr. Kelly and Dr. Grant. Dr. Munns was made a life member of the association. The next meeting is to be held at Sarnia in July.

WEST ELGIN MEDICAL ASSOCIATION

A meeting of the West Elgin Medical Association took place at Dutton on May 16th. An interesting paper on "Cirrhosis of the liver" was read by Dr. Ripley.

ST. JOHN MEDICAL SOCIETY

The annual meeting of the St. John Medical Society took place May 22nd, under the presidency of Dr. Corbet. The following officers were elected: president Dr. D. Malcolm; vice-president, Dr. T. E. Bishop; recording secretary, Dr. F. P. Dunlop; financial secretary, Dr. W. E. Rowley; treasurer, Dr. James Christie; pathologist, Dr. A. E. Macaulay; librarian, Dr. J. L. Duval.

The Lady Grey Hospital at Ottawa has recently experienced great difficulty as the result of an insufficient water supply. On one occasion the hospital was for several hours without water. The mains to the part of the city in which the hospital is situated are not large enough and many complaints have been made to the civic authorities. It is suggested that a sixteen inch main be laid from Bronson Avenue to the hospital. However, it will take at least a year to do this and, in the meantime, the hospital must be supplied with water. The question is to receive immediate attention. A large tank to be built near the hospital, in which a reserve of water might be kept, has been suggested as a solution to the problem.

Dr. W. W. Doherty, of Cambellton, indicted for the murder of D. J. Bruce, on September 21st, last, was acquitted on April 3rd. Mr. Bruce had an altercation with Dr. Doherty, on election day, after which he was struck in the eye by an umbrella in the hands of Dr. Doherty. The doctor stated that the umbrella was raised in self-defence and with no intent to hurt. The injured man died early next morning without regaining consciousness.

Since February 1910, when the hospital was first opened, one hundred and seventy-one patients have been treated in the Kincardine General Hospital and seventy-three operations have been performed. The work of the hospital has been somewhat restricted by the lack of space; the addition of a new wing is now under consideration.

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TREATMENT OF THE FRACTURES OF THE LONG BONES

By R. J. Manion, M.D. (Toronto), L.R.C.P. and S. (Edin.)

THE study of fractures is such an extensive one that the writer is limiting this paper to the above branch of the subject, even excluding the treatment of compound fractures of these bones, which latter have made some very interesting advances of late.

According to Eisendrath[1] there were at the Boston City Hospital, between May 24th, 1864, and December 31st, 1905, 38,627 fractures of all kinds. Of these, 34,994 were simple or closed fractures, and these were spread over twenty-five different bones, the eight mostly affected being:—(1) Radius, 4,657; (2) Humerus, 3,517; (3) Ribs, 3,196; (4) Femur, 2,898; (5) Clavicle, 2,756; (6) Fibula, 2,344; (7) Metacarp, 1,285; (8) Tibia, 1,259; (9) both bones of the leg, 3,902; (10) both bones of the arm, 1,875. So that fractures of both bones of the leg really were, next to fractures of the radius, the most frequent. It is of the treatment of these common, simple, or closed fractures that this article will deal.

The treatment of fractures has not advanced so rapidly as have other branches of surgery, and outside of the always progressing few, injuries of the bones are treated practically as they were a generation ago.

After summing up the different modes of treating fractures, we find that there are four methods of treatment recognized in different quarters at the present time, viz:—

1. Reduction. Absolute immobilization in splints for some weeks.

2. Reduction. Immobilization in splints for a short time, with or without extension, with relatively early massage.

Read before the Thunder Bay Medical Association, April 11th, 1912.

3. Mobilization and massage, as advocated by Lucas-Championniere.

4. Open or operative treatment.

This classification is not arbitrary, as the different methods may overlap to a certain extent.

Of the first method, absolute immobilization for some weeks or until the bone is solidly healed, most practitioners will agree that in the past it has been, and at present occasionally is, carried to excess. A great part of the injury of fracture is due to traumatism of joints, muscles, and ligaments, and this injury is increased by this method of treatment. After the bone is healed firmly it takes weeks or months to get the rest of the limb into fit condition for use, due to the atrophy of muscles, stiff joints, or teno-synovitis.

Method 2. Immobilization in splints for a short time, with extension if necessary, and relatively early massage and motion of joints, is the ideal treatment for the general practitioner. With it he will get quicker and safer results than with any other mode of treatment. The *x*-ray is of great value in this method, as in all the others, and may be used to aid in reduction or to see from time to time, during healing, the position of the fracture.

The value of the Röntgen ray may be lessened by too strong a belief in its truth-telling powers, and by wrong interpretation of the radiographs. Pictures should be taken in two planes, or, what is better, stereoscopic radiographs should be taken as advised by Emil Beck.[2] The stereoradiograph prevents the distortion or magnification of shadows. To quote Dr. Beck: "The single radiograph is merely a shadow-picture of the objects between the anode of the *x*-ray tube and the sensitive plate. If the object radiographed does not lie directly on the sensitive plate, its shadow will be magnified, and this magnification increases as the distance between the object and the sensitive plate increases. The nearer the lesion to the plate, the more distinct will be the shadow. The stereoscopic radiograph overcomes practically all of the shortcomings of the single plate. The fusion of the two pictures into one by means of the stereoscope builds up a plastic, translucent body resembling a glass model, in which all structures can be plainly distinguished. The magnification of shadows, which is the fault of the single radiograph, due to oblique exposures, or to unequal distances of lesions from the plate, is corrected by the stereoscope." Except for some special reason, protest should be made against patients seeing their own radiograph.

Method 3. The writer believes that this method of mobilization and massage deserves more consideration than it has been given in the past. This method has been ably described by Mennell,[3] in his recent book, which is mainly a discussion of the treatment of fractures originated and practised for many years by Professor Lucas-Championniere, of Paris. It is interesting to note, in passing, that the latter, Lucas-Championniere, from France, with Volkman from Germany and Roddick from Montreal, were the first to travel to Glasgow, about 1870, to see Lister's antiseptic work, then just coming to the front. The reading of this book may not convert one into an apostle of this mode of treatment, but it will at least drive him away from the other extreme of too long immobilization, and will encourage him to use more and earlier massage. This treatment requires more care and more time, in fact so much more time that one fears that the average surgeon would not be willing to give it. But as rewards for this, Mennell claims that there is less pain, shorter time of reparation, more perfect function, and more rapid return to work. Massage increases the blood supply and exercises the muscles, and mobilization keeps the joints in good condition; and, as a result, when the bone is healed the limb is ready for use, not as in the long immobilization treatment. The claim is even made that ossification goes on more rapidly, as proven by radiograph. The massage advocated is not the massage of the professional masseur, but in the words of Lucas-Championniere is "little more than a caress." Gentleness of touch is the only requiste according to Mennell, and the different movements of ordinary massage are harmful. The massage must always be painless. It is begun from the first visit to the patient and continued in daily seances till the limb is useful again. So far as mobilization is concerned, this does not mean that a broken limb is to be used at once, but only that some slight movement of the joints in the neighbourhood is begun from the first. And the use of splints is not to be altogether abandoned in the treatment of the majority of fractures, but as soon as it is possible safely to discard them this is done. In some cases only bandages are used, in others rigid splints, but the latter only for a short time, at least short according to our present conception of the treatment of fractures. He advises operation when any gross deformity exists, when there is deviation of axes, or when there is any disadvantageous shortening, and in most cases of fractured patella. That this method of Lucas-Championniere is not to be despised is proved by the fact that Mennell has treated some four hundred fractures in various parts of the body with exceptionally good results by mobilization and massage.

The last form of treatment, Method 4, is that of the open or operative treatment, so ably and scientifically advocated by W. Arbuthnot Lane.[4] In June, 1909, before the American Medical Association, Mr. Lane, said that since 1894 he has operated on all simple fractures from early infancy to extreme old age, in which he was unable to bring the fragments into satisfactory apposition, with the same uniform success.

This doctrine has been opposed by many good surgeons, one of the most recent being John H. Gibbon,[5] who is against indiscriminate operating, and leans towards more careful reduction and conservative methods. He is against operation in alcoholics or subjects of old syphilitic infection, and at extremes of age. He shows radiographs of some cases with poorly placed fragments, but good functional results. And many other surgeons have warned us against the adoption of Mr. Lane's treatment. While it may be, and no doubt is, perfectly safe in Mr. Lane's hands, it would be very dangerous when carried out by the occasional operator. It changes a simple fracture into a compound one, and while it gives the opportunity for a more perfect reduction of the fragments, it adds all the dangers of sepsis to the already damaged tissues. That this danger is not imaginary can be deduced from an article by Alexander[6] in which, in fifty-six operations for fracture of the patella, there were two deaths from sepsis, or almost four per cent.

Is perfect apposition of the fragments absolutely necessary for good results from treatment? If so, the open operation is the treatment par excellence. The writer thinks that we can get very good, if not perfect, functional results without perfect anatomical apposition. This contention seems to be upheld by the excellent functional results obtained after fractures of the clavicle, with so rarely a perfect reduction. And the *x*-ray has shown us that in many cases where function is perfect the fragments are at an angle or over-lapping. This is one of the reasons for the pendulum swinging so strongly in favour of operative treatment.

There is no question that operative treatment is necessary in some cases where the fragments persist in a bad position, and in most cases of fracture of the patella or olecranon. It is to be hoped that very soon some absorbable substance may be found which will be as serviceable as steel plates or steel screws; because, theoretically at least, the leaving of foreign materials in a wound is not ideal surgical treatment, and no doubt adds to the chances of sepsis; and if sepsis does occur these plates, screws, or wires have then to be removed. To take the place of steel many substances have been tried, such as chromic gut, bone plates or pegs, but they are not satisfactory. True, when the reduction has been perfect, and there seems no liklihood of the deformity recurring, there is no reason why the wound should not be closed without any internal support to the bone fragments. Removable clamps have also been used by some, among them a method by Taylor,[7] who is here to-night, but none of these have been generally adopted.

But the more sane opinion of the surgical world to-day appears to be that we should treat most simple fractures, where we can effect reasonable reduction, by splints, extension if necessary, and fairly early massage with movements of the joints in the neighbourhood of the fracture. That most difficult bone to hold united, the humerus, can generally be kept rigid enough for healing purposes by the inverted-V-shaped pad in the axilla, as recommended by Scudder,[8] and a shoulder-cap, with occasionally extension from the elbow. In a recent case of the writer's, of an oblique fracture with persistent over-lapping, where operation was advised but refused, a very satisfactory result has been obtained by a somewhat prolonged treatment by this method. In fracture of the clavicle a very simple method devised by the writer[9] has been very useful, "Having an assistant hold the patient with the shoulders retracted, a two-inch strip of adhesive plaster in the hands of the surgeon is attached firmly to the front of the affected shoulder and over the point of it. It is then swung around the back of the chest, under the opposite arm, across the front of the chest, and finishes under the mammary or axillary region of the affected side. Theoretically this is not quite proper, as it pulls down the affected shoulder, but this is corrected by a sling to elevate the elbow." In regard to being the original user of this apparatus, I had never seen it described or employed before my own use of it in 1907, but I willingly concede that other surgeons have probably employed it before me. I heard Dr. W. J. Mayo say one time, "If you discover what you think is a new method in surgery, you may rest assured that, if it is a good method, some one between Hippocrates and yourself has used it."

That other *bete noire* of surgeons, a fracture of the shaft of the femur, is in many cases well controlled by a double-inclined plane with extension from the knee in the axis of the femur. This is sometimes much more serviceable than the old treatment with a Liston's long splint.

In regard to fractures of both bones of the leg, extension by weight and pulley does not appear to be used often enough. It is a little difficult to apply, but improves the results.

Finally, in cases where reduction is not satisfactory or cannot be retained by the above methods, operation is necessary and advisable. It should then be carried out with all the aseptic precautions advised by Mr. Lane, because, in operative treatment of fractures, more than in any other branch of surgery, asepsis is the masterword.

References:

1. Eisendrath, Keen's "Surgery," Vol. ii., p. 75.
2. Emil Beck, *S. G. O.*, Vol. xii, p. 1.
3. Mennell, "Treatment of Fractures by Mobilization and Massage," 1911.
4. Lane, *Annals of Surgery*, Vol. l., p. 1106.
5. Gibbon, *Annals of Surgery*, Vol. lv., p 329.
6. Alexander, *Annals of Surgery*, Vol. liii., p. 508.
7. Taylor, *New York Medical Journal*, Sept. 9, 1911.
8. Scudder, "Treatment of Fractures," p. 165.
9. Manion, *Journal C. M. A.*, Vol. i., p. 1191.

An enquiry was held on the 10th of May into the cause of the death of a man named Roy Andrews, at the Prince Rupert General Hospital. The patient, who was suffering from measles, was placed in a tent used as an isolation hospital and provided with a male attendant. The case subsequently developed into double pneumonia, and the patient died. The necessity for an enquiry arose from the fact that it was considered by some members of the community that the man had died as a result of defective accommodation provided by the tent in which he was placed. Evidence was given by Dr. Eggert, who first attended the case, and by three other medical men. It was shown most conclusively that the man was suffering from serious complications when first admitted to the hospital and that no blame could be attached to those attending the deceased either in the tent or in the hospital. Dr. Eggert considered that the tent in which the man was placed provided the best possible accommodation for a case of this nature. It was felt, however, that the enquiry was necessary in order that the true facts of the case might clearly appear. Such an occurrence emphasizes very strongly the necessity for providing a proper building for an isolation hospital, and it is hoped that the hospital authorities will soon be in a position to do this.

LABYRINTH TESTS

By John P. Morton, M.B., F.R.C.S., (Edinburgh)

Aurist to Hamilton General Hospital

THE labyrinth, chiefly through its vestibule, is connected with certain centres in the brain. These centres on the left and right sides, when in a condition of normal equilibrium and tone, are said to be in a state of balance. In a general way it may be said that the maintenance of body equilibrium is under the control of the centres referred to. The sense of muscle tone, the equilibrium of the ocular muscles, the prevention of tremors, and the restful state of the stomach seem to be watched over by these equilibrium centres. The vestibules are connected very closely with these centres through the so-called vestibulo-ocular, vestibulo-spinal and vestibulo-cerebellar branches. The ocular muscles are controlled through the fibres which pass by the Deiter's nucleus to the corpora quadrigemina. The cerebellum is reached by way of the olivary and restiform bodies. The spinal connexion is made by way of the olivary body.

The normal tone of these centres is supplemented by certain normal stimuli from the vestibules on the respective sides. If from the vestibules come any additional or abnormal stimuli, then a state of imbalance maintains and certain disturbances of equilibrium will result. Moreover, if the normal stimuli are cut off by destruction of the vestibule, this also causes imbalance with similar results. These results may be dizziness, tendency to falling, sickness at the stomach, tremors, or nystagmus. Nystagmus, being the most easily induced and observed, has been the most studied.

Abnormal stimuli may originate in the vestibule by disease or be induced experimentally. The principle is very simple at first sight; viz., if additional stimuli come from the right vestibule, the right centres predominate and the nystagmus will be to the right. If the right vestibule is destroyed the left centres overrule, even if no additional stimuli come from the left vestibule; for the left centres are still receiving their normal stimuli from the vestibule, while the right centre has its own normal tone, but is not receiving its normal stimuli from its vestibule.

Read before the Toronto Academy of Medicine, March, 1912.

Normal Balance of left centre=Normal tone + normal vestibule stimuli.

Normal Balance of right centre=Normal tone + normal vestibule stimuli.

This condition of balance is disturbed either by the addition of stimuli to either side, as in irritative conditions of the labyrinth, or by the removal of the normal vestibule stimuli from either side, as in destruction of the labyrinth.

Permit me to deal with another theoretical point. If a current is induced in a semi-circular canal towards the end with the ampulla, the cilia of the hair cells in that particular cristus acusticus will be swept outwards towards the vestibule, and this has been found to send additional stimuli to the centre of that side and, of course, cause nystagmus to that side; but if the current is induced from the ampullated towards the non-ampullated end, the cilia of the hair cells will be swept inwards, towards the semi-circular canal, and this has been found not only not to send additional stimuli, but rather inhibit the tone of the centre connected with that particular vestibule. It would make things very simple if this rule applied to all the canals, but, unfortunately, it is found that exactly the opposite is true of the superior semi-circular canals, for here a current towards the ampulla inhibits, and a current away from the ampulla stimulates, the tone of the corresponding centre.

Next I would call your attention to some interesting anatomical considerations. There is the exposed position of the external, semicircular canals lying really on the floor of the additus ad antrum. Still more interesting is the fact that all the canal openings lie on the posterior wall of the vestibule, the area of which is not more than one-fifth of an inch. The ampullæ of the superior and external semi-circular canals are about one thirty-second of an inch apart, so that the corresponding cristus acusticus must be even less than this. This makes it difficult to understand how a current induced towards the cristus acusticus of the external canal can avoid influencing the hair cells of the cristus acusticus of the superior canal. It makes it easy, however, to understand how so many of the induced and abnormal nystagmic movements are complicated. It was originally thought that the superior canals had to do with rotatory nystagmus, but I believe that the accepted idea now is that rotatory nystagmus is induced by the action of currents on more than one cristus acusticus at the same time. The posterior canal has received very little attention, because the relative position of the ampullæ of the two sides is so similar that it is difficult to tell from which cristus the stimulus is derived. I hoped to be able to give you to-night the results of examination of the posterior canal of the left side in a patient of mine in whom the right labyrinth is destroyed.

It is important to remember that almost any part of the labyrinth may be affected with a fistula leading in and still be completely walled off from the rest of the labyrinth. A fistula may open into the external semi-circular canal and the case may not be at all dangerous until some zealous surgeon unnecessarily opens up the vestibule, for when the vestibule is infected the infection has access to the ductus lymphaticus and its accompanying vein. Moreover, when it reaches the cochlea, perhaps by a probe being passed from the vestibule forwards, the aquæductus cochlea is another means of spreading the infection; both of these routes being common channels by which trouble may reach the cranial cavity. Before dealing with the tests themselves, it would be interesting to review the work of Ewald, Barany, and Newman; for from the history one gets the best perspective of any problem. I will omit this, however, as I am sure you are all familiar with these facts.

Before performing any of the tests for nystagmus one should, if possible, examine both of the eyes and ears. Note any purely ocular nystagmus; in this the rapidity and extent of the excursions are the same. Look carefully for physiological or spontaneous nystagmus, for the former is present much more often than one would suspect. The eyes should be tested in extreme abduction for these conditions of nystagmus, and, if present, the perimetric angle at which they appear should be noted in order to compare it with the angle at which the induced nystagmus occurs. The ears should also be carefully examined in every particular, but especial mention might be made of the upper tone limit and the lower tone limit. The former is undoubtedly best estimated by Struycken's monochord, and this is true for limit of bone as well as that of aerial conduction. This instrument shows that the very highest notes are heard well by bone conduction. This more accurate method of testing the upper tone limit is a great help in testing the labyrinth.

ROTATION TESTS:—Barany has constructed within the last year a chair for the rotation tests. Besides having the necessary supports for steadying the feet, arms, and head of the patient, there is a special fixture for holding the head of the patient in any particular position. This is necessary in order to test the different canals accurately, and, as a perimeter is attached, the angle at which the nystagmus appears may be compared exactly with the angle noted for any physiological and spontaneous nystagmus which may have been previously noted.

In Professor Breuhl's clinic in Berlin, where I saw this work carefully done, the patient is rotated to the right ten times, as rapidly as possible. It is important in stopping the rotations to do it as suddenly as possible. The fluid in the right semi-circular canal flows away from the hair cells through the tube towards the non-ampullated end; this, as shown before, does not send additional stimuli and even inhibits the right centre. While this is going on the fluid in the left canal is flowing towards the hair cells and so causing additional stimuli to travel to the left centre, thus the left centre is stimulated and the right centre inhibited, producing a nystagmus to the left. If the patient is rotated to the left, the nystagmus will be to the right. If the right labyrinth is destroyed and the patient is rotated to the right, the tone of the centre will remain unaffected while the left will be stimulated, thus giving nystagmus to the left, just as if the right vestibule were not destroyed. For this reason the rotation tests are not very satisfactory, on account of the movement of the fluid in the two external, semi-circular canals at the same time.

In my work at Hamilton, I simply have a piano stool fitted with arm rests and a head rest. In my notes I mark the length of the nystagmus as long or short. No induction period is noted, for if the vestibule acts at all it commences immediately. I note the direction of the nystagmus and, if it is not seen when the patient is looking straight ahead, I examine him in positions of extreme abduction. It is well to remember that the vestibular actions are much more active in neurasthenic, and much less active in hysterical, states than when in a normal condition.

Caloric Tests:—This is of course a much more useful test than the former, as each vestibule can be tested by itself. Examine the ear first for polypi, granulations, and cholesteatomatous masses, as these will prevent the hot or cold water coming in contact with the outer wall of the vestibule. The water used must be above or below the temperature of the endolymph. Cold water should be at seventy-five degrees Fahrenheit or, if the patient is very feverish, results can be obtained with water even at ninety degrees. If warm water is used, which is much more comfortable for the patient, it must be above the body temperature. Hang a receptacle on the wall with the bottom on a level with the patient's ear, in order that the force of the stream will have no effect in upsetting the vestibule.

When the right ear is syringed with warm water an upward current is induced in the vestibule, this current can only pass over the cilia of cristus acusticus of the superior, semi-circular canal and wave them towards the non-ampullated end, which will stimulate the right centre and produce a nystagmus to the right.

Professor Breuhl thinks it is very difficult to tell just when the nystagmus commences and so does not lay much stress on the fine measurements of induction period. I have tried to follow Dr. D. MacKenzie's plan of measuring the induction period, and in order to do this well I think the suggestion of Phillips, to raise the upper lid and watch the eye with a glass, is a good one. According to MacKenzie, the normal induction period is thirty seconds, and, although slight variations may be neglected, if it were less than fifteen or more than forty-five, I think one would do well to record the fact. A comparison of the reaction in the two ears may be made, being sure to have the temperature of the water the same in both cases and to have the receptacle at the same height.

FISTULA TESTS:—Compression or aspiration may be made by a bulb fitted with a tube, which in turn is fitted with a top which exactly fits the external meatus. Breuhl uses an instrument which measures the amount of the pressure. In the case of a perforation in the right, external, semi-circular canal, compression produces a current which sweeps the cilia away from the non-ampullated end towards the utricle, and this, as we saw before, stimulates the right centre, causing nystagmus to the right. This was, in fact, the original experiment of Ewald in the case of pigeons. The modern plan is to try compression and then aspiration and, if there is no response, try them alternately. Polypi, granulations, cholesteatomatous masses, or a very patent state of the eustachian tube, will sometimes spoil the results. On account of the ease with which this test can be applied it is often well to try it first.

GALVANIC TESTS:—These are not used in the Breuhl clinic as yet, in spite of M. J. Babinski's strong support of them. This authority considers them better than all the other tests. If one pole is placed in the hand and the other in front of the right tragus, the nystagmus is always said to be towards the kathode; the hand, the sponge, and the skin in front of the tragus must always be moistened with salt solution. Babinski mentions, as other signs of vestibule irritation: increase in resistance, certain oscillations of the head, and unilateral inclination and rotation. Alexander, of Vienna, describes a case of bilateral destruction of the labyrinth which showed normal galvanic reactions to a three milliampere current. Wheil explains these results by saying that, although the vestibule may be destroyed, the vestibule nerves may act as good conductors if tested fairly early after vestibule destruction.

Static Tests:—Patients should be made to stand with eyes closed, first on both feet and then on each foot alternately. They should be asked also to walk backwards and forwards with eyes closed. The patient will complain that objects in the room move in the same direction as the nystagmic movements, and, if he feels like falling, it will be away from the side to which the eyes jerk.

I wish now to enquire into some of the indications from these tests. In acute, diffuse labyrinthitis, on the second or third day the patient would be deaf, and the right labyrinth, we will say, would be out of action. There would be no response to the caloric tests; and the rotatory tests would be useless because of the functioning of the other canal, chiefly because of the presence of a strong, spontaneous nystagmus which is one of the principal symptoms of this condition. This strong, spontaneous nystagmus to the left is due to the balancing power of the right centre being removed. Objects swim around to the left and the patient tends to fall to the right; but, as is characteristic of labyrinth conditions, if the patient changes the position of his head he falls in another direction. This picture, in the same case, is quite different at the end of the second week. The patient is still deaf and there is no caloric reaction. The strong nystagmus to the left has now disappeared or is very weak, for the centres soon relearn their proper balance. The rotatory nystagmus tests will probably show a preponderance of the left over the right centre. As the centres have again learned their proper balance, the patient's position in bed is now normal and he shows very little tendency to fall to the right as before. If a case has serous labyrinthitis on the right side, the tests show a change from the former condition. The deafness is not marked and the caloric test is present, although difficult to elicit; the rotation tests are present. Even at the commencement of the trouble the nystagmus to the left would be very slight, if present at all. Patient will not fall to the right but might find difficulty in standing on one foot with eyes closed. If a fistula is present with any of the above conditions the fistula test would be present.

When one has a purulent labyrinthitis with trouble developing in the cerebellum, it is possible to get two types of reaction: Type A., in which the tests would show the same result as in the acute, diffuse labyrinthitis, with spontaneous nystagmus to the left, deafness, no caloric reaction, falling to right, and change in the position of the head causing change in the direction of falling. Type B., in which, even with the labyrinthitis of that side completely destroyed, there is a strong, spontaneous nystagmus to the right which could only be explained on the basis of cerebellar trouble, the patient will now fall to the left instead of to the right, and a change in the position of his head will make no change in the direction of the falling. If a strong, spontaneous nystagmus to the left suffers no decline within forty-eight hours after its onset, it is very likely to be due to cerebellar trouble. The unbalanced centres soon begin to relearn their old balance.

I will close this paper with the indications for operation which these conditions give us. When the fistula test is positive but the hearing is fair and the vestibule tests normal, Breuhl advises the radical mastoid operation, for the trouble is probably circumscribed. In serous labyrinthitis only the radical should be done.

If there is no spontaneous nystagmus and the caloric test shows normal vestibule, but there is a fistula and the patient is very deaf, a radical mastoid might be done; but if spontaneous nystagmus showed itself, proving vestibule as well as cochlear involvement, then the labyrinth operation must be done, either a Hinsberg or a Hinsberg-Jansen. Neuman, of course, in this condition, would perform his operation of exposure of the dura of the posterior, cranial fossa. When hearing remains but the vestibule shows improvement and there is a fistula, Richards advises leaving the labyrinth alone; Jansen and Neuman would differ in this, although Professor Breuhl might agree to it. With loss of hearing, no caloric reaction, and positive fistula reaction, all would agree as to operation. And, lastly, when the tests show cerebellar involvement following the labyrinth route, undoubtedly the Neuman operation, combined with the exploration of the cerebellum, is the proper method.

PLEURISY IN CHILDREN

BY MALCOLM MACKAY, B.A., M.D., C.M., SHERBROOKE, QUE.

IN reviewing the subject of pleurisy in children one is impressed with the importance of several points which in routine practice are apt to be neglected. In touching upon these let it be understood that we are dealing with primary pleuritis, to the exclusion of pleurisy due to secondary infection from a pulmonary lesion, or from any other obvious source of infection in the body. Further, let us exclude empyema and treat solely of the fibrinous and sero-fibrinous types.

Holt[1] says: "Whether pleuritis occurs as a strictly primary disease is still a moot point, and, although at times reported, it is very hard to exclude primary lung affection." This contention is hardly acquiesced in by other authorities, unless Holt refers to pulmonary lesions which cannot be detected ante-mortem, and this appears to be an excessive refinement of diagnosis, for, as the separation of the lung tissue from the visceral pleura is a microscopical task, likewise the separation of an inflammatory condition of these structures is microscopical. The practical point for the physician, however, remains, that pleuritis does occur as the first apparent lesion and continues to be the most important lesion throughout the course of the malady.

Holt states that, as an independent clinical disease, acute dry pleurisy has no existence in infancy and early childhood, and, further, that serous pleurisy is infrequent in children, and very rare in those of under three years of age. I think that these statements are responsible for the opinion usually held by students at graduation; namely, that pleurisy is one of the rarest diseases of childhood. Personally my disillusionment came when I was confronted at my final examination with a small boy having pleurisy with effusion, an immediate diagnosis being demanded; and I have no reason to regret my sudden conversion.

Samuel West[2] states that neither old age nor youth is exempt from this disease, and Baron reports one hundred and fifty-nine cases of pleuritis in four hundred and three autopsies in children. Lord records sixty-three cases in children of ten, or under, in seven

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hundred and sixty clinical cases at the Massachusetts General Hospital, where children comprise only a small number of the admissions. Jacobi[3] says that pleuritis is of frequent occurrence in the first decade of life, and although the majority are pyæmic, still cases with serous secretion are not uncommon in the very young. With these authoritative statements I think we may assume that pleurisy in children is a condition we are quite likely to meet with in practice.

Naturally the majority of statistics are compiled from hospital records, and I feel that if we could collect figures from general practitioners we should be possessed of facts of even greater interest and value to the average physician. It is with the hope that the following figures may be supplemented by others from the members present that I submit them to the attention of the association. During the five years in which I practised in a country town, I saw twenty-eight cases of primary pleuritis, and of these twelve were fibrinous and sixteen serous. Nine of these cases occurred in children of ten years of age or under, one other was thirteen years, and another was fourteen years. So that, in my experience, these cases are by no means rare in childhood. I have no hesitation in saying that as large a proportion of children was found both previous to and after this five years, but, as many of these were hospital patients, I have omitted them entirely. Of the nine cases above mentioned, four were fibrinous and five sero-fibrinous.

Let us now turn our attention to a few of the difficulties in diagnosis. In the first place, bronchial breathing heard plainly over the dull area suggesting consolidation is very deceptive and not uncommon in children, but the sense of resistance on percussion over fluid will generally determine the diagnosis, especially if we are helped by the presence of the Skodaic note at the apex. To differentiate a serous effusion from an empyema, the physical signs help but little, a local œdema, or bulging, points of course to empyema, as do also profuse sweating and diarrhœa. The blood count may help occasionally, but it is not infallible, and it should be noted that the temperature, contrary to the usual opinion, is more continuous and higher in serous than in purulent effusions.

The history of the case is more important than the physical signs and symptoms, and if the effusion follows pneumonia or any pyogenic infection we may be certain that we are dealing with an empyema. If, on the other hand, the case begins with a pleural friction or a rapidly increasing accumulation of fluid, the probability is in favour of serum. An exploratory puncture with a needle should not be delayed too long if there is any doubt.

In children suffering from pleuritis what is the outlook for recovery? Doubtless though the immediate prognosis is not as good as for adults, yet it may be considered on the whole as being good.

What then of the future? Is the child as good a risk as it was previous to the attack, and if not wherein lies the danger and what can we do to lessen it? To answer these questions we must consider, first, the ætiology of the disease, and, secondly, whether the trouble is likely to cease with arrest of the acute symptoms.

Holt says that, in serous effusion, when no definite cause can be assigned, there should always exist a suspicion of tuberculosis. Osler[4] finds that the more he studies the question the larger does the proportion of primary pleurisies appear to be of tuberculous origin. Still[5] declares that serous effusion in a child almost invariably means tubercle. Lord, in Osler's system, has a collection of statistics showing that sero-fibrinous pleuritis is caused by the tubercle bacillus in from twenty-two to eighty-five per cent. of all cases. Bowditch,[6] during thirty years, observed ninety cases of pleurisy, and of these thirty-two were sooner or later affected with tuberculosis.

Of my twenty-eight cases, eight have shown signs of tuberculosis, and nine others were considered to be of tubercular origin, as there was in each case a marked history of exposure either from other members of the family or from well established house infection. One of these died of double pneumonia, but whether this was tubercular or not it was impossible to ascertain.

Of the nine children, two I considered tubercular at the time, and the subsequent history has borne out the diagnosis, one developing a tubercular kidney and the other a tubercular meningitis. Four others were exposed to infection, and of these one is "subject to colds and is easily fatigued," another has been subject to paroxysmal attacks of hæmaturia.

With this short *resumé* of the incidence and ætiology of pleurisy in childhood, I wish to come to the point of my whole paper, the one important thing that we as general practitioners must grasp, namely, that any child who comes under our care with a primary pleurisy should be considered as a possible, nay more, a probable, victim of tuberculosis, and should be treated accordingly. It is not necessary to point out that tuberculosis in any form is essentially a disease that requires time, and plenty of time, to cure; and that, consequently, we must not consider our work ended when the acute symptoms subside, and the child is able to be up and round. There is no use in telling the parents that the child has "weak lungs" and that they must be careful that it does not "catch cold." In fact that is probably the worst advice possible, although in my experience that is the popular prescription, and generally means that the poor child is suffocated under half a dozen flannel shirts beneath its ordinary garments, and carefully protected from fresh air of all kinds. Muffled up to the ears, as it generally is when allowed outside, the least exertion causes a profuse perspiration with subsequent chill and "bronchitis." Thus we have the beginning of the end. The tale is so common that it would be trite were it not so pathetic.

We must give explicit directions and leave nothing to chance. When we have corrected all abnormalities, such as nasal obstruction, let us prohibit school for a prolonged period, unless the education can be carried on in the open air; and with this we must encourage out-door games rather than the frequenting of poorly ventilated places of amusement. Fresh air is to be prescribed day and night, and a personal inspection of the sleeping apartments should be made in order that a practical demonstration may be given. If possible the residence should be located in the country or open suburb. Give definite rules as to the quality as well as the quantity of food; too much knowledge is taken for granted in this subject and we must be precise. Let the clothing be warm, yet light and comfortable. Explain the methods of judicious "hardening" by means of cool sponging of the neck and chest. Forbid undue exertion. Last, but not least, impress the parents with the idea that the child must be taught self-restraint and unselfishness. This point of a physician's advice is not sought, and is seldom given, but it should not be omitted. We owe it to the child and to those with whom it comes in contact. That an evenly balanced mind and a thoughtful, considerate disposition can be developed in a child is demonstrated every day, and the helpfulness of these virtues during a long period of convalescence cannot be over estimated.

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OBSERVATIONS RELATING TO DIET IN TUBERCULOSIS

By W. B. Kendall, M.D., L.R.C.S., L.R.C.P., Gravenhurst

At the International Congress on Tuberculosis, held at Washington in 1908, there were some three hundred papers presented, covering probably every phase in connexion with this huge problem; of these only three dealt either directly or indirectly with diet in this disease. This will perhaps serve to illustrate how few authorities one has to consult on the question, and for this reason why one rather hesitates to approach so wide and important a subject at all.

While out-door living and every other possible means known to increase the body defense must be made use of in treatment, the dietetic management of the tuberculous patient is one of paramount importance in endeavouring to sustain the normal body functions, not only in the production of energy and heat, but also in replacing tissue waste. Great differences of opinion, as is always the case, exist in this as in all other lines of professional thought.

That there is a lack of uniformity in methods of dieting tuberculous patients, and this even among physicians who have had the widest experience, was shown in a most striking way by the data collected and correlated by Professor Irving Fisher[1] from some ninety-five of the leading sanatoria of the world. It was interesting to note the multiplicity of opinions expressed regarding this, as well as other subjects, when discussing these topics with many of the medical directors of British and European sanatoria last year. At the King Edward VII. Sanatorium, Dr. Noel Bardswell thinks it necessary that all food should be weighed before being served, while Dr. Marcus Patterson, of Frimley, is so solicitous for the welfare of his patients that he personally carves the meat, and supervises the serving and progress of the meal. Many physicians still adhere closely to the idea of forced feeding, some advocate a non-flesh diet, depending on foods outside of meat for the necessary body requirements.

Again, we find some who have, among other items of diet, a preference for one particular kind of food in their dietary. Among

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these might be mentioned, raw meat, beef juice, nuts, eggs, milk, buttermilk, and even malt extracts and liquors.

In normal persons I cannot help but believe that the average food intake, as determined to a great extent by the appetite, is quite sufficient for the body wants. It is necessary, however, in treating the sick, to have a standard dietary to guide us, or at least to which we can refer, even if we do not slavishly follow it.

The body requirements are such that food must be taken in sufficient quantities to supply the necessary material for the repair of the tissues, as well as to give energy to meet the demands regarding the maintenance of body heat and the power required in connexion with muscular activity or work. The principal nutritive materials contained in food are, therefore, the substances required to make up the body and to perpetrate functional activity. These are divided into proteins, fats, carbohydrates, and ash or mineral matter.

Proteins form about eighteen per cent. of the body weight, and constitute the basis of nearly all of its tissues. This living tissue is constantly undergoing change, being built up into new substances and breaking down again into less complex material. By estimating the final excretions we can determine to some extent the tissue change causing them. Almost all of the nitrogen from broken down tissue reappears in the urine, and can be estimated. The amount of nitrogen excreted is an indication of the amount of tissue change. It is necessary to have a knowledge of the protein ingested, the nitrogen excreted, and to have these balance so as to maintain nitrogenous equilibrium. Physiologists have fixed on different amounts as being the necessary number of grams of protein per day required for the average healthy man. Professor Chittenden,[2] and others, claim that the nitrogen balance may be maintained under ordinary conditions of life, and even that an actual gain in strength and physical vigour may take place under a ration much below the protein required by some older standards.

We know that energy can be converted into heat, work, etc., without loss, so that in discussing a standard by which energy can be measured, we speak of the amount of heat foodstuffs are capable of yielding on complete combustion, and that this may be taken as a measure of their value as sources of energy. The energy requirements of the body are expressed in units of heat or calories, and these are produced mainly by fats and carbohydrates.

In considering the diet for a tuberculous patient, all the foregoing considerations must be recalled. Much will, of course, depend on the patient's physicial condition, especially as regards the amount of toxemia present, and the effect this is having on the physiological digestive functions.

Given an early case of tuberculosis with no marked gastric derangement and the patient will usually react quickly to treatment, appetite and digestion will improve, tissue tolerance to toxemia be produced, with probable increase in weight established. In cases of this nature it is simply a matter of giving a well balanced diet, of a sufficiently high caloric value to ensure of having a margin on which to gain weight. Unfortunately, we have many cases more advanced in the disease with gradually failing resistance, or perhaps with an extremely virulent type of infection, in whom the matter of a sustaining diet is indeed a problem.

Each case must be dealt with on its merits, and it is wrong to prescribe average fixed amounts for all, much depending on the patient's size, activity, and state of digestion. In former times so-called forced feeding was considered to be essential in the dietary of patients suffering from tuberculosis, and in fact this practice is still followed by many advisers to-day. It may possibly be that the fact of the marked tendency to loss of flesh has stimulated the desire to increase the food intake, hoping for a probable gain in weight. My experience has been sufficient to convince me that this principle of feeding tuberculous patients is fallacious, and I am sure I am only voicing the opinions of many others whose experience in following this specialty in practice has been much wider than my own. While no one can question the fact that excessive feeding is infinitely better than under feeding, why should it be necessary to make either mistake? There is no doubt that the normal organism, if called upon, can give more service than that required of it, and probably maintain these functions for a more or less considerable period of time if called upon to do so. But what is to be gained by pushing these physiological requirements to the extreme, even if safe, limit.

According to Atwater's[3] table, a blacksmith can with health and comfort carry on his day's work on a diet, the daily proportion of food elements of which are P. 176 gms., Fat, 71 gms., C. 666 gms., having a total fuel value of 4,117 calories.

Is it reasonable to expect that a patient with diseased tissues can hope to cope with such excessive amounts, and especially when he is of necessity compelled to lead a more or less sedentary life? While my readers may feel that this is citing an extreme example, we learn that in a well-known European sanatorium[4] a ration having a fuel value of 5,500 calories is prescribed of which 1,200 gms. per day is the protein proportion.

But to cite instances at home, I find patients constantly coming under my observation who have been advised to partake of a much more liberal diet than they are able to handle. Generous weight-gaining seems to be the goal sought for, and oftentimes I am sure the cost of such is not duly considered.

Starving tissues are fed, not by the food ingested by the patient, but by the amount of nutrient material absorbed by the gastric and intestinal mucous membrane. To illustrate the discomfort, if not positive harm, that is caused by too generous feeding, the following case may be cited: a male patient, after being in residence for a period of three weeks, received an urgent call to return to his family. Before leaving I was asked how it was that a satisfactory gain in weight had been made with but three regular meals a day, while on similar rest and under ideal surroundings, with the best medical care at home he suffered from indigestion, having to take calomel quite frequently for what he termed biliousness. This patient averaged eight raw eggs a day, sometimes twelve, one pint of cream, three pints of milk, together with cod liver oil, besides his regular meals.

I feel that an organism half starved should be fed generously, but not burdened, and that while a gain in weight up to or a little above the normal is desired, it should not be pushed much beyond this, and certainly not at the expense of the physical health. Not only does surplus weight make a great daily demand upon digestion, assimilation, and elimination, but the getting rid of the unassimilable food surplus is an unnecessary waste of energy. At least thirty-three per cent. of our patients have impaired digestions. Most of them suffer from constipation and many have to be treated for intestinal indigestion with diarrhœa.

In my judgment rapid and large gains in weight are very apt to encourage a feeling of false security in a patient, as well as to oftentimes bolster up friends and relatives with a confidence in the patient's apparent well being, or improvement, not supported by the facts of the case. I have known this confidence to be responsible for many indiscretions on the part of patients, some partly from necessity, but many others through folly.

Not only is it thought necessary by many physicians to materially increase the quantity of food ingested, but in very many cases the principal addition is made in the form of protein. By reason of the increased amount of tissue waste to replace, it is probable that a tuberculous patient does need a larger protein intake. It would hardly seem reasonable, however, to expect that a patient could handle an excess of this component part of food as well as a healthy individual.

It has been demonstrated by Professor Chittenden[5] that the ordinary standards for healthy individuals contain too high a proportion of protein, and these do not, therefore, need to be exceeded in order to produce the desired results in tuberculous patients; in other words, the ordinary standard is quite sufficient.

Protein forms one-sixth of total food value, and requires a much greater expenditure of energy in its digestion and utilization than does any other food principle. It is therefore necessary to make use of fats and carbohydrates as economizers of protein, so that the latter may be utilized entirely to repair tissue waste. As the kidney is the chief outlet of nitrogenized wastes, it is obvious why unnecessary demands should not be made of it. If this is done, intestinal putrefaction occurs, thus exerting a harmful influence upon the functions and tissues of the body by bacterial toxines formed within the alimentary canal. These toxines have their effect upon the blood, and by lowering the resistance of the tissues prepare the soil in other parts, mainly the liver and kidney, for successful invasion. Bardswell and Chapman[6] found that "patients made much less satisfactory progress on the very large diets than on diets of considerably smaller nutritive value." They also observed that "any considerable increase in the protein in the diet produced a disproportionate excretion of nitrogen, an increase in the amount of imperfectly oxidized proteins in the urine, a decrease in the percentage of nitrogen absorbed, and an increase in the amount of aromatic sulphates excreted, indicating increased intestinal putrefaction."

Most tuberculous invalids, or at least those with whom we have had to deal, are thoroughly impressed with the erroneous idea that they must eat large amounts, and that milk and eggs are most essential, if not dietetic specifics, in the treatment and possible cure of the disease. The greatest surprise is expressed by many patients entering an institution when they find this is not the case. Some feel annoyed to think that we are so penurious as not to supply these special items of diet *ad lib.*, and often offer to buy them for themselves. Preconceptions of this kind die hard and form prejudices which are with difficulty overcome by those in sanatorium practice.

Not only is the quality and quantity of food important, but the manner of its ingestion requires careful regulation, if the best results are to be obtained. Rest before and after meals should be insisted upon. Food should be eaten slowly and well masticated, by so doing we at once reduce the quantity of food ingested, and at the same time maintain the normal intake of protein. We make it a rule in the Muskoka Free Hospital that patients shall take twenty-five minutes in which to partake of a meal. The dining-room is under the supervision of a nurse or steward, and a bell is rung when this time has elapsed. No patient is allowed to leave the table before this alloted time.

Contentment, congenial company, and freedom from worry, are also important factors in promoting digestion. It is often difficult to get patients to pay sufficient attention to details, and to realize their importance. By the frequent, regular use of the scales we get the patients interested, and can by this practical measure help prove to them the great importance of proper diet in treatment.

Dr. Lawrason Brown,[7] of Saranac Lake, while giving a summary of the recent advances in the treatment of tuberculosis, said regarding diet: "Eat once for yourself, once for weight, and then once for the bacteria." The scales, he said, were the best criteria of diet, in a patient with no temperature or complications. The aim was to bring the patient slightly above his normal weight, by gaining a pound per week. Then the diet was to be reduced to the lowest point of table comfort, but not enough to cause any loss of weight. Milk should be dispensed with, and then three meals given, with plenty of carbohydrates. Digestive disorders must be treated. At the Toronto Free Hospital for Consumptives some observations were recently made by Dr. W. J. Dobbie,[8] extending over four periods of six weeks each. These revealed the fact that the average gain per patient in six weeks increased from 2·9 pounds in the first period, when there was no supervision of diet, to 3·8 pounds in the second period, when there was a more or less complete supervision of the general dieting. In the third and fourth periods, where there was in addition to a general supervision, a careful consideration of individual needs, the average gain per patient for each period reached 4·46 pounds.

In reference to so-called vegetarianism, or the partaking of a flesh-free diet, we have found by experiments that in healthy individuals normal nutrition and functions can be maintained without meat, and while we have no data of our own to substitute our views, we still feel convinced that tuberculous patients with good digestive functions should also do as well on such a diet. For cases farther advanced in the disease, with probable impaired appetites and digestion, we would not advise such a procedure. The only advantages apparent in obtaining the protein required from a non-flesh source is the smaller cost, while against this we have disadvantages of greater bulk, the less appetizing nature of such a diet, together with the fact that absorption is slower and not so complete.

In conclusion I wish to state that we aim to direct our patients what to take and what to exclude, depending on the appetite to a great extent to secure sufficient amounts. Adhere closely to a well-balanced, varied diet, with food of the best quality, well cooked and given in proper proportions of food elements. Exclude fads, permit no lunches between meals, no alcohol, eggs cooked, and at meals only, and give milk alone sparingly. See that meals are not too bulky and given at considerable intervals. Aim to keep patient slightly above normal weight and try not to greatly exceed this. Such general advice should be checked by observations of total calories present, attention being given to the individual patient's special requirements.

It is surprising how few people, even those of ample means, appreciate the relative value of different kinds of food, and can purchase the same economically. The greater number are influenced in their buying by appearance, taste, or general attractiveness, rather than by the consideration of nutritive value. For example, prepared breakfast food as compared with bulk cereals, the more expensive cuts of meats, such as steaks, tenderloins, etc., as compared with rump roasts. Others would regard skimmed milk and buttermilk as of little value. Pastry, fancy biscuit, and cakes as compared with plain bread and butter. Eggs at twelve cents per dozen would be economical food, at eighteen cents per dozen fairly so, but at twenty-five cents or over, expensive. The greatest care must be exercised, therefore, in not recommending articles of diet beyond the patient's means when just as good results can be obtained from foods costing less money.

By referring to Rubner,[9] we find that by his experiments one gram of protein is capable of yielding 4·1 calories, the same for a gram of carbohydrates, and 9·3 calories for a gram of fat. By following this it is quite simple to formulate a suitable dietary.

THE WEEKLY ARRANGEMENT OF MEALS

	Breakfast	Dinner	Supper
Sunday.	Porridge, fried eggs, toast, butter, milk and tea.	Soup, roast veal, potatoes mashed, corn, fig pie, custard, bread, biscuit and butter, milk and tea.	Baked salmon, cabbage salad, sliced bananas, ginger cake, bread and butter, milk and tea.
Monday.	Porridge, liver and bacon, toast, butter, milk and tea.	Soup, roast beef, or stew, boiled potatoes, bread, biscuit, and butter, steamed pudding, lemon pie, milk and tea.	Baked fish, boiled potatoes, jelly, cake, bread and butter, milk and tea.
Tuesday.	Porridge, fried ham or boiled eggs, toast, butter, milk and tea.	Vegetable soup, mutton or stew, mashed potatoes, stewed corn, mincepie, jelly, bread, biscuit and butter, milk.	Cold beef or lamb, potato salad, stewed strawberries, ginger cake, bread and butter, milk.
Wednesday.	Porridge, boiled eggs, bread, biscuit and butter, milk, tea or coffee.	Vegetable soup, lamb stew, boiled potatoes, carrots, bread, biscuit and butter, milk, corn fritters, apple pie.	Cold beef or ham, boiled potatoes, maple syrup, cake, bread and butter, milk and tea.
Thursday.	Porridge, lamb chops or boiled eggs, toast, biscuit and butter, milk and tea.	Roast veal or pork, dressing, potatoes, cabbage, rice pudding, raisin pie, biscuit and butter, milk.	Salmon or ham, figs, doughnuts, biscuit and butter, milk and tea.
Friday.	Porridge, poached eggs, toast, biscuit, butter, milk and tea.	Tomato soup, fried fish or boiled beef, potatoes, wax beans, ginger pudding, pumpkin pie, bread, biscuit and butter, milk.	Potatoes, cabbage salad, prunes, cake, bread and butter, milk and tea.
Saturday.	Porridge, fried white fish, pork chops, fried potatoes, toast, soda biscuit, butter, milk and tea.	Soup, roast beef or ham, mashed potatoes, stewed tomatoes, apple pie, ice-cream, bread, soda biscuit and butter, milk.	Ham, plums, cake, bread and butter, milk and tea.

The foregoing arrangement will give a fair idea of foods used in the Muskoka Free Hospital. In order that we might get an exact idea of the values of these foodstuffs, we weighed everything eaten by twenty-five patients during a period of seven days. The patients were all men and of about an average physical condition as far as the disease was concerned. These amounts were carefully recorded, together with all waste and food not used. Without going into details of the food values of each separate article, I will simply give the grams per patient per day of the component parts, together with the daily caloric value. These are as follows: P. 106·88; F. 124·95; C.-H. 337·53; Cals. 3,280·77.

The weights of patients were accurately observed, gains being made in each case. These gains ranged from 1·5 lbs. to 5·5 lbs., or an average gain of 3·15 lbs., during the week.

It may be of interest to give the changes in weight as shown in the last twelve hundred and twenty cases. These were taken from the annual reports of the National Sanitarium Association. Of twelve hundred and twenty patients, ten hundred and seventy-one made gains in weight, while one hundred and forty-nine lost. The records are as follows:

Number of Patients.	Time in Residence.	Average Gain.
522	One month	11·6 lbs.
226	One to three months	9·56 lbs.
323	Over three months	14·4 lbs.

Number of Patients.	Time in Residence.	Average Loss.
68	One month	5 lbs.
22	One to three months	3·9 lbs.
59	Over three months	6·8 lbs.

The results will depend of course, to a great extent, on the honesty and common sense displayed by the patient in the manner in which he follows his physician's directions.

CONCLUSIONS

1. Forced feeding is not essential in the treatment of pulmonary tuberculosis.
2. Great gains in weight should not be sought, but an endeavour made to secure a gradual increase in the patient's weight up to a point slightly above normal.
3. A lower protein content is better tolerated than the amounts now usually given.
4. The partaking of meals should be under close supervision, with rest before and after meals enforced.

5. Constant attention must be given to the question of proper proportions of food elements.

6. Cheerful and contented patients are more likely to be hearty eaters, and to progress favourably, than those who worry.

7. Eggs and milk are not indispensable in the dietetic management of tuberculous patients.

8. Lunches should not be given between meals unless there is a special reason.

9. It is a hardship to advise patients to procure food, the price of which is almost prohibitive, when a diet of equal or greater nutritive value can be purchased for less money.

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REVOLVER BULLET IN THE CHIASMA

CONSECUTIVE BINOCULAR BLINDNESS

By J. N. Roy, M.D.

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IN perusing medical literature on accidents to the eyes caused by revolver or gun shots, we find a large number of most interesting observations. Modern war, in which firearms play the principal rôle, has furnished us with a vast field of study; and, since 1870, very important and complete works have been written on this subject. The patient, whose history we are about to relate, received in his left temple a revolver bullet which lodged in the chiasma, and which was the cause of permanent, binocular blindness. As the *x*-ray examination permitted us to localize this foreign body in an indisputable manner, and as we have been unable in our bibliographic researches to find a similar case, we believe that this observation is unique of its kind.

Observation: Mr. A. B., aged seventy-five years, was brought to us at the Hôtel-Dieu on May 31st, 1910, to consult us with regard to his eyes. The previous evening, at ten o'clock while crossing one of the city parks, he received in his left temple a revolver bullet which caused blindness. He did not lose consciousness, and after wandering for a certain time, he was conducted to the hospital by a policeman. He naturally passed a bad night, and when we saw the patient the next morning, he complained of cephalalgia, of bleeding at the nose, of spitting blood, and of no longer seeing clearly.

On examination we noted a hole in the left temple of about 4 mm. in diameter. This cavity was 3 cm. from the outer canthus, and 2 mm. below the horizontal meridian. The skin of the temple, of the cheek, and of the eyelids on the left side, was tattooed with powder grains. There was quite considerable palpebral œdema and very pronounced exophthalmos of the left eye, pericorneal hæmorrhage and slight chemosis.

An old ulceration of the cornea had left a scar on the external part, near the limbus. The corneal sensibility, the anterior chamber, and the ocular tension were in normal condition. The iris, which did not react to light, was dilated, and we noticed a posterior synechia, the remains of an inflammation of rheumatic nature, dating back many years.

The ophthalmoscopic examination permitted us to observe very considerable chorioido-retinal hæmorrhage, especially on the temporal side. There was also a hæmorrhage into the vitreous humour. The colour of the disc was normal. The patient counted fingers at a distance of 0·20 cm.

If the examination of the left eye was interesting the right also presented unusual features. In fact, we found a paralysis of the third nerve accompanied by ptosis. The pupil was dilated, and did not contract to light. There was no perception of light. The optic nerve was normal in appearance, as well as the other parts of the eyeball.

Anterior rhinoscopy permitted us to note a slight rhinitis on both sides, and blood in the left nostril. On examining the pharynx, we found a dry pharyngitis, and posterior rhinoscopy showed blood still coming from the left choana. There was no anosmia.

The two maxillary sinuses were equally transparent to the diaphanoscope, and the right pupil was luminous. The left pupil was obscure, and this phenomenon is explained, not by a sinusitis, or by blood in the corresponding antrum of Highmore, but by hæmorrhage of the vitreous. Normal condition of both ears. The sensibility of the skin of the face on both sides was normal.

There was nothing at all of interest from the point of view of heredity. As regards the patient's own history, apart from the usual children's diseases, he claimed to be subject to rheumatism, and to have had an ulceration of the left cornea, also an iritis of rheumatic nature. No tuberculosis or syphilis. Normal urine.

In the presence of rather classic ocular symptoms, it was easy for us to locate the exact spot where the foreign body was to be found. Nevertheless, we asked our friend, Dr. Desloges, radiologist of the Hôtel-Dieu, to be good enough to make an *x*-ray examination. Needless to say, we were not tempted to introduce a probe into the wound to discover its condition, for these manœuvres are always to be condemned, and sometimes produce unfortunate results. In the present case, we would have risked, especially, increasing the lesion of the optic nerve as well as the retro-bulbar hæmorrhage. After having placed on the head a certain number of wires, to serve as guides, the patient was radiographed in three different positions. These three negatives permitted us to locate positively the bullet in the chiasma.

As our patient had no alarming symptoms from a vital point of view, and consequently nothing compelled the removal of the foreign body, we prescribed the following treatment.

Ice kept continually on the left eye, a dressing on the temple, boric lotion, borico-mentholated salve for the nose, an antiseptic gargle, light diet, and calcium sulphide pills of 0·07 cgm. each, one pill three times during each twenty-four hours. We were pleased to note in the days following that the patient had no temperature, that the headache was less severe, that he no longer spat blood, and had no more epistaxis, and that the palpebral œdema and the chemosis diminished rapidly.

June 7th: The ophthalmoscopic examination of the left eye allowed us to make the same observations as the day after the accident, and the sight was the same. The disc of the right eye was still normal as regards colour, and there was no perception of light. We discontinued the calcium sulphide pills, and prescribed potassium iodide in doses of one gram three times a day.

June 14th: The temporal wound was healed. No temperature. The headache, the palpebral œdema, and the chemosis of the left eye had disappeared. The ocular conjunctiva was growing pale, and the exophthalmos had diminished. The ophthalmic appearance of the fundus was the same as before. The eyesight was not any better. In the left eye, the ptosis and the other paralyses of the third nerve were improving. The disc was becoming pale. We prescribed a series of injections at the temple of sulphate of strychnine, ten drops of a 1 per cent. solution, once a day.

June 28th: The pericorneal hæmorrhage of the left eye had disappeared. The chorioido-retinal hæmorrhage appeared to have become absorbed to a small extent. The nasal half of the disc was whiter than the temporal half. The patient still counted fingers at a distance of 0·20 cm. As the vitreous opacities had now partially cleared up, we measured the field of vision. We then noted temporal hemianopsia, with numerous scotomata in the nasal portion. The field of vision was naturally contracted since the patient could only see at a short distance. As for the right eye, the ptosis and the paralysis of the third nerve had entirely disappeared, and the disc continued to atrophy. The blood vessels of the retina appeared to be diminishing in size.

July 26th: The chorioido-retinal hæmorrhages and those of the vitreous humour of the left eye were being gradually absorbed. The disc was pale, especially in the nasal half. The vision was a little better, since the patient could count fingers at a distance of 0·30 cm. On the right, the atrophy continually increases.

The patient then left the city, and we were ten months without seeing him.

May 20th, 1911: Almost a year has passed since the accident. Since leaving the hospital the patient's general health has been excellent. He has never suffered from any general symptoms such as headache, nervousness, insomnia, loss of memory. On examination of the left eye, we note that the pupil is a little more dilated than is normal, and in an irregular manner it reacts very slightly to light. The crystalline lens is transparent, and there are still flakes in the vitreous humour. The supero-external half of the interior of the eyeball shows, in certain places, spots of chorioido-retinal atrophy. In the infero-external section, near the disc, there is an almost symmetrical area of proliferating retinitis. This measures about two disc-diametres in its different axes. There is no chorioidal laceration. We note evidence of the pigmentary type of chorioido-retinitis and deposits of pigment around the areas of atrophy and of the cicatrix left by the proliferating retinitis. The nasal side of the optic nerve is atrophied, and the temporal half slightly discoloured. The blood vessels of the retina are of normal calibre. The patient can always count fingers at a distance of 0·30 cm., but it is impossible for him to recognize colours. His visual half-field is narrowed. As to the right eye, the pupil is dilated, and the optic nerve entirely atrophied. The retinal arteries and veins are filiform, and the fundus has grown pale. There is now no paralysis of the third nerve.

We saw our patient again in March, 1912, and his condition was the same. He still counts fingers at a distance of 0·30 cm., and states that his health is excellent. Apart from the scar formed by the proliferating retinitis which has diminished a little in volume, we note nothing in the left or right eye that differs from what we found in our last examination, and which is worth describing.

If we now analyze the phenomena observed in our patient, we see that the bullet produced a series of most classic symptoms. In the first place, in order to find from what distance the bullet was fired, we experimented with revolvers of different makes, and with blotting paper, wet and dry. In comparing the incrustation of powder on the paper and on the skin of the temple, of the cheek, and of the eyelids, we found that the revolver was fired at a distance of 0·25 or 0·30 cm. from the wounded man. Moreover, we can add that from the cutaneous pigmentation, the cartridge was loaded with black powder. The aspect of the wound, and the *x*-ray appearance of the foreign body in the chiasma, lead us to conclude that the bullet was from a 22 calibre revolver, corresponding to a diameter of 5 mm. As our patient is not left-handed we were almost certain that we were not dealing with an attempt at suicide, as, from the distance from which the shot was fired, it would certainly have required a great deal of accuracy for things to have occured as they did.

The bullet, in crossing the left orbital cavity, must have injured the vaginal sheath, and perhaps a part of the optic nerve, for the chorioido-retinal and vitreous hæmorrhage lead us to accept this hypothesis as being the most probable. We do not believe that the retro-bulbar hæmorrhage which caused the exophthalmos was of itself sufficient by compression of the globe to cause all the pathologic lesions of the fundus. On entering the chiasma the bullet perforated the left posterior ethmoidal cells and produced epistaxis on this side and also caused the spitting of blood.

After completing its course, the foreign body was stopped in the chiasma, and was the cause of the loss of vision in the right eye, and of the left temporal hemianopsia in one of the two following ways. The bullet had entirely destroyed the right optic nerve and the decussating fibres of the right tract, which supply the nasal half of the left retina, or had totally destroyed the right optic tract at the chiasma as well as the decussating fibres of the left tract. The radiographic examination has indeed permitted us to make a positive localization, but, naturally, it is impossible for us to be more precise.

On arriving at the brain, the bullet produced an effusion of blood which, once coagulated, compressed the right third nerve, which caused the ptosis and the paralysis of the right internal rectus on the corresponding side. At the end of a month, the clot having been absorbed, the paralysis of this nerve disappeared.

The trifacial and the olfactory nerves were not affected, for the sensibility of the cornea and of the skin of the face was always normal, and the perception of odour unchanged.

Contrary to first appearances, it was the eye-ball on the side opposite to that on which the bullet entered which, from the point of view of sight, suffered most from this injury, and the complete atrophy which resulted caused the sight of this eye to be irremediably lost. It is also interesting to note that the circulation at the fundus was bad, since the retina is pale, and that the blood vessels are filiform. As for the left eye, the nasal half of the disc is completely atrophied, yet direct fibres of the left optic nerve transmit the luminous impression from the retina sufficiently well for the patient to count fingers at a distance of 0·30 cm. The calibre of the blood vessels of this eye is about normal. Proliferating retinitis localized here in the infero-external part of the eye-ball is sometimes produced by severe chorioido-retinal hæmorrhage, especially when there is a laceration of the chorioid, a complication which did not exist in our patient.

Foreign bodies, such as bullets, are rarely septic. In our case there was no elevation of temperature. It is always astonishing to note to what point projectiles are tolerated by the brain without the outset of general phenomena. Our patient has never manifested any except headache, which, moreover, rapidly disappeared. He did not even lose consciousness after having been shot, and complained of no immediate symptoms arising from shock.

As for acromegalia, there was nothing to fear, seeing that the bullet was sufficiently distant from the pituitary gland to produce no change, and as the patient had arrived at an age where these affections have no longer their "raison d'être," as they are rarely met with except during the period of growth. As this foreign body is now encysted, the surrounding tissues are protected from contact with it; hence our patient is in no danger of saturnism, nor is he likely to lose the sight remaining to him.

In closing, we wish to draw attention once more to this revolver bullet lodged directly in the chiasma,—diagnosis verified by the *x*-ray examination,—which has produced a series of most classic symptoms. Medical literature furnishes us with a very large number of cases of monocular or binocular blindness caused by projectiles which have destroyed an optic nerve, with or without sympathetic ophthalmia, or again by projectiles which have destroyed both optic nerves at the same time. However, we know of no observations where a bullet has lodged in the chiasma and produced double blindness absolute of one eye and incomplete of the other, which could be compared to that which is the subject of this article.

DOES A HUMAN TICK-BORNE DISEASE EXIST IN BRITISH COLUMBIA?

By John L. Todd, M.D.

Associate Professor of Parasitology, McGill University, Montreal

A TICK-BORNE disease sometimes occurs among persons living in some parts of Montana. The disease is a very fatal one, and its symptoms resemble those of typhus fever. The tick which transmits this disease in Montana, exists in some parts of British Columbia; in order to ascertain whether the disease also occurred there, letters were sent to a few doctors, asking them whether they had ever met with cases of illness which had been ascribed to tick bites. Among the replies were letters from two doctors who described several cases in which symptoms, entirely different from those occurring in Montana, were ascribed to the bites of ticks. The history in all of the cases mentioned was practically identical. Paresis, or paralysis, which came on suddenly, was seen in a child. On examination a tick was found attached to some part of the patient's body; it is noticeable that in most instances the ticks were found near the nape of the neck. In some cases the symptoms ended in death; in others the tick was removed, and, with good nursing, complete recovery followed in a few days.

The similarity of the history in the cases reported was striking, so a series of letters was sent out to over one hundred and fifty doctors practising in British Columbia. From the answers so far received it appears that cases with similar histories have come to the knowledge of doctors living in seven places in the southern and central parts of British Columbia.

The history of the affection associated with tick bites in these cases is entirely different from the ill-effects that have heretofore been described as following the bites of ticks; consequently it seems possible that an undescribed disease may be caused by ticks in British Columbia. It is important to ascertain whether this is so. This note is written in the hope that it may induce doctors, who have seen ill-effects follow tick bites in British Columbia, to publish their observations. The writer would be greatly obliged if doctors who do not care to publish their experiences would communicate any information they may have concerning such cases to him.

SOME EXPERIENCES WITH RADIUM

By G. Sterling Ryerson, M.D., L.R.C.S. (Edin.),
F.R.S.A. (Lond.)

HAVING now had three years experience in the treatment of disease with radium, I think that it may be of interest to record some of my experiences with that therapeutic agent. I do not propose to take up time by introducing the recorded experiences of others but to confine myself to my own observations.

Radium, like all new methods of treatment, has gone through the stages of enthusiasm and excessive laudation, whence comes disappointment and deprecation. It has now reached a stage of acknowledged usefulness, the result of experience. I think that I can safely say that, given certain factors, radium is a fairly reliable remedy in some forms of sarcoma, epithelioma, nævus, angioma, cheloid, rodent ulcer, and in some diseases of the eye, such as trachoma and ulcers of the cornea. What are these factors? I would say: (1) Strength of radium; (2) Duration of applications; (3) Amount of filtration; (4) Age of patient; (5) Location of the disease.

To take these factors in their order:—

1. Strength of Radium: Weak applications of radium in malignant and semi-malignant disease are not only useless but harmful; radium in low strength seems not only to do no good but actually to stimulate the new growth. On the other hand, in such cases as angioma and nævus, too great strength produces violent reaction and does harm. A just mean must, therefore, be maintained, a knowledge of which is only gained by experience. In general it may be said that too great strength is safer than too weak a dose.

2. Duration of Applications: The length of application depends on the form of disease treated and upon its locality. Where the disease is superficial, as in nævus, cheloid acne, and ulceration of cornea, the applications should be short, from fifteen minutes in the last to two hours in the first instance. Where the disease is more deeply situated and where the ultra-penetrant rays are desired to reach the part, long sittings of six, twelve, twenty-four or even forty-eight hours are required. In the latter case, usually, tubes are introduced into the substance of the tumour.

Read at the Ontario Branch meeting of the C.M.A., May, 1912.

3. Amount of Filtration: The amount of filtration by lead or pure nickle screens, with as many layers of paper as may be required, depends on the amount of penetration necessary. The deeper the penetration the thicker the screens, and the longer the application demanded.

4. Age of Patient: The age of the patient is an important factor. My experience is that very old persons do not do well with radium. I shall hereafter shun patients of eighty years and upwards. On the other hand, I have had good results in persons in the seventies and sixties. I have found that persons suffering from nævus, who have reached middle life, are amenable to radium treatment but react and are cured very slowly. But sarcoma and epithelioma give as good results as in younger persons. I have not had much experience with children except in nævus, which does well.

5. Location of the Disease: It makes considerable difference whether the skin or mucous membrane is the site of the morbid process. For the most part, cases in which the skin is the part involved give good results, the character of the disease, of course, being considered. Cases in which the mucous membrane of the mouth is the site of the disease do not, as a rule, do well. The tongue is also doubtful, though I obtained a good result in one case; the larynx is uncertain. The result depends a good deal upon the amount of involvement and the biopsy of the growth. One case I have had, in which the lining membrane of the nose was invaded by a fungating epithelioma, which did remarkably well. I have had good results also where the conjunctiva was affected by epithelioma. In one case of epithelioma of the lip I obtained a good result; in two cases I did not, but the subjects were aged eighty-two and eighty-four respectively. In two cases of lupus vulgaris of the nose, I have obtained good results; in one of the cases the mucous membrane was involved. Whether these results will be permanent, remains to be seen. In one, *x*-rays had been used for months without benefit.

The results in tuberculous glands of the neck in young persons, where the glands have not broken down, are eminently satisfactory. I might mention that in one case of psoriasis of the nails, admittedly a most unsatisfactory thing to treat, great improvement has resulted.

To sum up: I believe, as the result of experience, that radium is a therapeutic agent of permanent value and that its use will grow and increase as we get further experience, and as a larger quantity becomes available at a reduced price. I am convinced that radium will sometimes effect a cure where *x*-rays fail, because of its penetrating power, because of peculiar properties of its own, and because it can be used for long periods without injury to the skin. Radium burns are easily cured by Friar's balsam or scarlet red.

MEASURES are being taken throughout Alberta to enforce the provisions of the Provincial Health Act in relation to the sale of milk. The Act is efficient and far reaching in its requirements, as the following clauses show. "The local board of every city, town, or village, shall cause every cow kept for the purpose of public milk supply to be inspected as to its general health, and in addition the said board shall provide for the testing of every such cow by 'tuberculin' by an executive officer at the expense of the said board." "Any cow showing a temperature, after the injection, of 104 degrees Fahrenheit, or over, shall be immediately isolated from the milking herd, and shall not be allowed to return to any milking herd of cattle." "No dairyman or other person infected with a communicable disease, or who has recently been in contact with a person so infected, shall milk cows or handle milk vessels or containers until a certificate has been obtained from the local board that no infection or danger therefrom exists." "A milk house shall be provided which is entirely separate from the stable and the dwelling house. Every milk house shall be kept clean and frequently lime-washed throughout, and shall not be used for any purpose except for the handling of milk." "No dairyman or other person shall use any preservative or colouring matter in any milk."

Case Reports

LES LESIONS ARTICULAIRES DE LA GOUTTE CHRONIQUE DEMONTREES PAR LA RADIOGRAPHIE

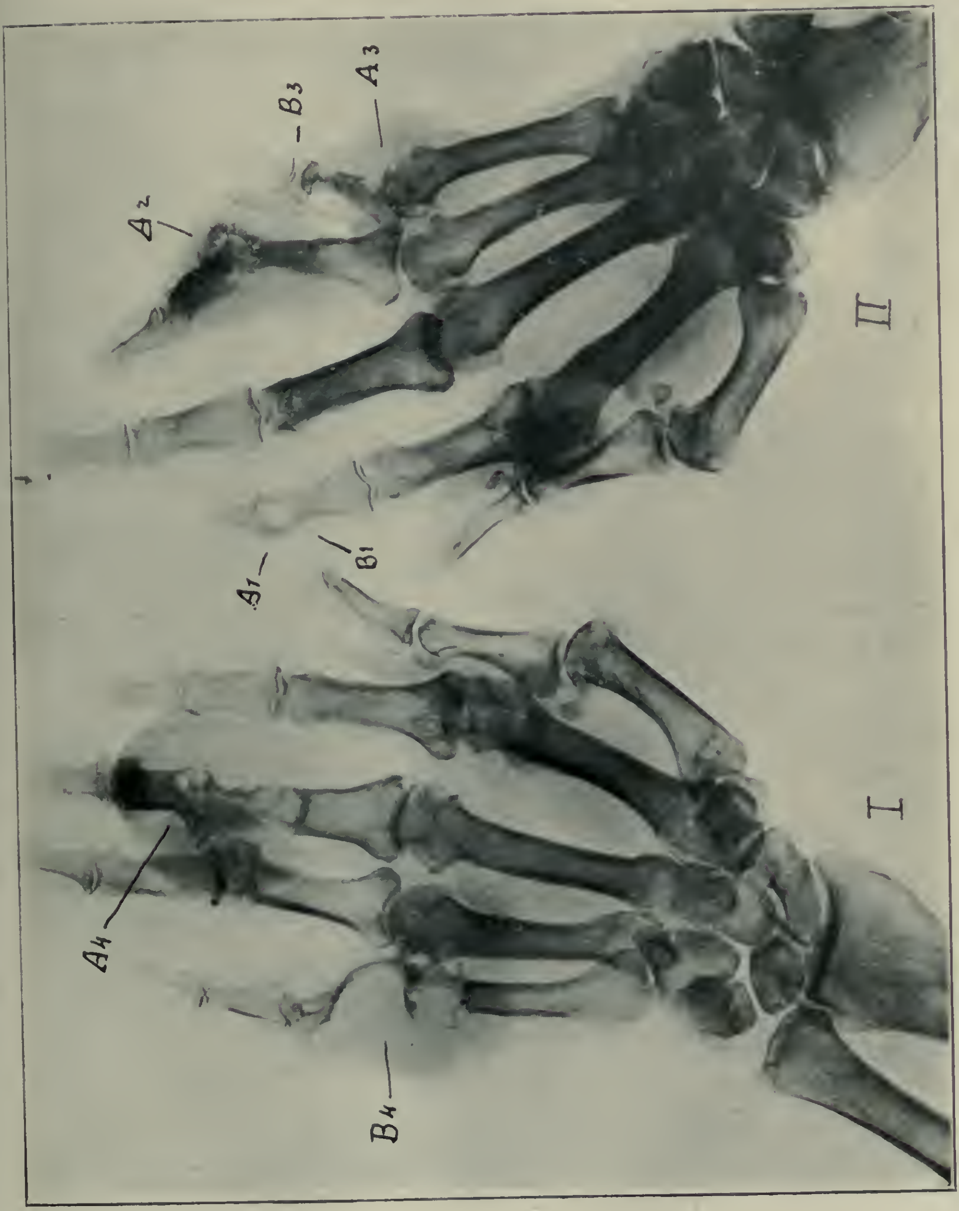
CE qui caractérise essentiellement les manifestations articulaires de la goutte, c'est l'infiltration du cartilage diarthrodial, infiltration qui se propage ensuite aux points d'implantation des ligaments et des tendons. Ce fait, demontré par Garrod, provient de ce que l'urate de soude ne se précipite facilement que dans les tissus peu irrigués. L'infiltration est d'abord interne, centrale; elle finit par gagner la périphérie avec la répétition des fluxions articulaires; elle détruit à la longue le cartilage et les ligaments, incrustant les jointures de ces dépôts crétacés qu'on appelle des *tophi.* C'est un processus de déformation lente; suivant l'expression pittoresque de Sydenham, la goutte "tord les doigts et les rend semblables à une botte de panais."

Mais les méfaits articulaires de la goutte ne s'arrètent point là. Un cas de goutte datant de dix-huit ans que j'ai observé récemment à l'Hôpital Notre Dame, m'a permis de le constater.

Il s'agit d'un épicier agé de 52 ans, souffrant de la goutte depuis dix-huit ans, ayant depuis plusieurs années une néphrite goutteuse, qui est venu dernièrement mourir d'urémie dans mon service de l'Hôpital Notre Dame. Cet homme avait commencé de boire à dix-huit ans; plus tard, tenant un commerce d'épiceries et de liqueurs fortes, il en était arrivé à boire tous les jours plusieurs bouteilles de bière ou de porter, sans compter quelques petits verres de gin ou de wisky.

Cet homme avait trente-trois ou trente-quatre ans, lorsqu'un accident le força à demeurer vingt minutes dans l'eau glacée. Presque tout de suite après la goutte s'installa progressivement chez lui, et pour ne plus le lâcher, les fluxions articulaires, d'abord éloignées, se rapprochèrent de plus en plus, devinrent de plus en plus marquées, a tel point que le malade en souffrait continuellement, et qu'il fut bientôt impotent.

Il est facile de se rendre compte du développement des lésions. Chaque fluxion aiguë augmentait le volume du tophus des articulations atteintes. L'incrustation calcaire des cartilages, des ligaments, des tendons, accroissait progressivement la douleur. Les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I

os, soumis à une irritation prolongée, et atteints d'ostéïte, devenaient douloureux à leur tour. Les doigts se déformaient lentement. Puis vinrent les réactions inflammatoires secondaires. Les tophi ulcérés ouvrirent les articulations, y laissèrent la suppuration pénétrer et désorganiser les surfaces osseuses que les cartilages ne protégeaient plus. Une phalange se nécrosa et s'élimina avec la bouillie uratique. Des jointures s'ankylosèrent. Des foyers d'atrophie osseuse s'établirent. Puis les viscères se prirent à leur tour, et lentement préparèrent la mort du supplicié.

Tel est le drame pathologique dont M. Panneton, radiologiste de l'Hôpital Notre Dame, éclaire l'un des tableaux. La radiographie, nette, claire, détaillié, nous révèle l'intensité de l'action uratique, l'état de désorganisation du squelette des mains, dont la cause première est la présence du tophus, et la cause seconde l'ulcération de la masse crayeuse.

Il suffit, pour bien saisir cette double action, de comparer les deux mains. Les deux tophi de la main droite ne sont pas ouverts; mais l'infiltration progressive et considérable de l'urate de soude a rougé presque toute la phalange de l'auriculaire et détruisant le disque cartilagineux de la première articulation inter-phalangienne du médis, permis aux têtes osseuses de pénétrer l'une dans l'autre. Les tophi de la main gauche ont suppuré; aussi les lésions sont-elles plus considérables: l'index porte une ankylose flanquée d'un foyer d'atrophie osseuse; l'auriculaire a perdu une phalange; la première articulation interphalangienne de l'annulaire est énormément déformée, les extrémités rougées des phalanges ayant perdu leurs rapports normaux; la première articulation inter-phalangienne de l'annulaire est désorganisée par un tophus considérable en voie de suppuration.

Quant aux métacarpiens de l'une et l'autre main, il suffit d'en considérer l'extrémité distale pour voir jusqu'à quel point l'infiltration uratique leur a été nuisible.

Montreal. E. P. Benoit.

Editorial

CANADIAN MEDICAL ASSOCIATION

IF it be a retrograde change for a man to allow himself to become simply a physician, surgeon, or specialist, or in other words, when he is addressed by his professional title the speaker implies in the title all the man is and all he stands for; would it not be a pathognomoic symptom, or sign of great degeneracy, if it could be legitimately said of the medical profession that it stands for nothing more than an aggregation of men whose only vocation is the prevention and cure of disease?

It can be both truthfully and reverently stated that man was not created exclusively for a vocation, but to be a man engaged in a vocation. It was never intended that the man should be submerged in the vocation. It is the imperative duty of every man to have a legal, useful, and honourable calling, for without one he cannot develop either the latent or potential powers of his manhood. His vocation may make heavy demands on his energies and on his time, but these are only his attributes and opportunities,—the rays given off by the radium—the man himself. The radium is not exhausted by the emission of its rays, so the man should never let his vocation so impoverish him as to leave him unfit to fill his position in domestic, social, civic, and national life. The obligations of the home, of society, of the community, and of the state, are ever paramount to those of a vocation. The man who neglects the claims of parents, brothers or sisters, or of wife and children, the obligations of society, of the state, and of religion, for the love of his vocation, seldom gets and never deserves any commendation. The results following such neglect are often disastrous to all concerned.

The Canadian Medical Association can look back through the vista of some four or six decades. It has served the useful purpose of disseminating much valuable knowledge pertaining to the science and art of medicine. It has formed a bond of union between the physicians of the different provinces. Its work and its influence rather represent the stages of childhood and of adolescence than the more strenuous life of maturity. It has not yet reached a status in either its scientific or national sphere at all comparable to that of the British or American Associations. This is simply stating a fact without implying any aspersion on our association. Never before in its history were the demands so imperative and the time so opportune for a great forward movement as now. The early consummation of inter-provincial registration, which will afford a choice of location anywhere in the Dominion; the new demands on our profession to help conserve the stamina of our robust Canadian life in the face of a great immigration; the call for medical aid to formulate laws and regulations pertaining to marriage, education, sanitation, so that the immigrants may become desirable, intelligent, healthy citizens—may be a very imperfect summary of our new obligations, but is it not sufficient to show that if the Canadian Association is to become the great factor it ought to be in our national life, it must broaden its outlook?

The coming meeting at Edmonton in August will furnish a splendid opportunity for studying some of the new problems that have arisen during the past two decades. It should be possible to have a very full and accurate statement pertaining to the character and number of our foreign immigrants.

Through war, or other causes, nearly every great nation of antiquity, or of modern times, has had to face the problem of assimilating a large foreign contingent. The medical historian, by showing the effects on the native population that have usually followed the influx of a large foreign element, would be placing the medical profession in a position to become an important factor in helping to solve the immigration problems now confronting our people. It has been stated that the wars of Napoleon diminished the stature and impaired the virility of the French. It will be a lamentable thing for Canada if, in the years to come, inter-marriage with less vigorous races reduces the stature and impairs the virility so characteristic of our present population. The Canadian Medical Association should use every legitimate means in its power to enable it to speak with truth and with authority on all matters pertaining to the physical well-being of the people. Physicians should assume the full responsibility of leadership in all matters concerning the health of the public. They must not allow either the political demagogue or the quasi-religious fanatic to mislead the people. Education, in the laws governing heredity and sanitary science, is of vital importance not only to the well-being, but also to the very existence, of the race.

Many problems that could very properly be brought up for consideration suggest themselves, but space will only permit of a very brief reference to one, viz., that of medical education. The history of every one of our provinces, and of every state in the Union, teaches us how very easy it is for a few men to stampede a local legislature. We have had a recent example of this in Toronto, when, by the aid of a prominent lawyer, a new cult was enabled to get an entrance into our profession. It would be a much more difficult and expensive task to get any such consideration from a national Parliament. With the aid of Dominion registration the Canadian Medical Association can exert a powerful influence in moulding public opinion in regard to a high standard of medical education. Let our National Association assume full responsibility in regard to this question, and it will be very difficult for any unworthy cult to gain admission into our ranks.

MEDICINE AND CULTURE

IN a copy of the Toronto *Globe* of recent date, we came upon a letter signed by Dr. John Hunter, of Toronto, which excited our cordial approval. It concerned the old question of the culture of the physician. Time was when the general culture of the physician was considered so much a matter of course, that one might almost say his medical knowledge formed part of his general knowledge. Leonardo da Vinci was the type of these, but his race degenerated long ago. Of recent years, and particularly in the United States, there has arisen the type of what one might call the "*medicus ex necessitate*." The population in America was increasing at such an enormous rate that doctors had to be, as it were, rushed on the market. Such goods, manufactured in haste, out of any material that came to hand, bore all too plainly the marks of that haste and of the quality of material. The diploma mill of the latter half of last century in the United States flourished; but this was all very largely a matter of pure necessity. Within the last ten years the American Medical Association has done a great deal towards improving the standard of education in the States. With many lamentations they have set to work to purge the country of the evil of cheap diplomas. They manufactured doctors in haste; now, at their leisure, they are repenting of it; and they are repenting of it to good purpose. About twenty-nine of the medical schools to-day in the United States require two years of an Arts course as a preliminary requirement to the study of medicine. Two or three of their large universities, like Harvard and Johns Hopkins, require a bachelor's degree in arts before the candidate may enter on the study of medicine. This is a standard not yet reached by any other university in the world, although it is true that the high school education of such countries as Germany, England, Norway and Sweden, brings a man very close to the level of the B.A. degree as it stands in this country.

In Canada the large universities have for some years recognized the principle that it is desirable for the graduate in medicine to possess some tincture of letters and to know something of the humanities; and to that end they have established the so-called double courses, by means of which a man may obtain the degree of bachelor of arts and doctor of medicine in the course of six or seven years. But such courses are entirely optional, and few men have taken advantage of them. The public conscience in this matter is as yet not sufficiently keen.

But Dr. Hunter's letter in the *Globe*, in which it is stated that a large proportion of the graduate class in medicine at Toronto University this year were B.A. men, gives us a very welcome indication that the public conscience in this respect shows signs of an awakening. That it is eminently desirable that our medical men should possess not only a thorough foundation of medical knowledge, but also a certain learning in literature and the fundamental sciences cannot be gainsaid. Such an education gives him at once that standing in his community, and that claim upon the respect of his fellows, which the successful exercise of his profession so particularly demands and deserves. We cannot do better than quote one or two paragraphs of Dr. Hunter's letter: "Within the past quarter of a century, what had been the attitude of individual physicians towards their vocation throughout the ages, has become that of an ever-increasing number of medical men. In the press, at the meetings of the Academy of Medicine, and at conventions, men have been persistently calling out for a higher standard of both literary and scientific culture. Why? Because these are fully convinced that in the vocation of medicine, as in every other lawful vocation in life, it is the sacrifices men are prepared to make and the character of the services they are able to render, and not what they can get out of their vocation, that are the only legitimate passports to success, to self-respect, and to honour. In the life of the late Dr. J. F. W. Ross we have a splendid example of an ideal that is gaining prominence in medicine. Nobility of character, broad culture, scientific and literary wealth, strength, time, were the sacrifices placed on the altar of service.

"The physicians of the future who will be held in the highest esteem by both the public and the medical profession, will be those who will bring to their vocation characters '*sans reproche,*' the broadest literary and scientific culture the age can give, and the self-sacrificing spirit."

We can only echo the hope which Dr. Hunter expresses at the close of his letter, that "not only fifty, but one hundred per cent. of the members of our graduate classes will be Bachelors of Arts, as well as Bachelors or Doctors of Medicine."

OZÆNA

OZÆNA, the disease characterized by slow development, and leading to atrophy, crust formation, and fœtor, without ulceration, at the present day remains a mysterious disease, in spite of much laborious work by eminent investigators. Numerous hypotheses, instead of serving to elucidate, have led to a confusion of ideas which greatly hinders definite research. It has become more and more evident that we lack an essential basis, and that certain fundamental questions must be solved before we can enter upon the further study of this difficult subject.

Our numerous bacteriological investigations have no foundation on which to rest until the infectiousness of ozæna is established, and the many ingenious attempts to represent ozæna as having the characters of an inherited constitutional disease are valueless as long as the hereditary transmissibility of ozæna is unproved. Infectious or hereditary? To this question laboratory research has vouchsafed no reply, nor has clinical observation of the individual yielded important proof relative thereto. A comprehensive question such as this is not to be settled by the examination of single individuals, but by dealing with them collectively. "We must study ozæna as a disease of the people."

In the above words Professor Alexander, of Vienna, appealed last September to the third international laryngological congress in Berlin, with the result that not only was the collective investigation ordered, but it has since been thoroughly organized so far as the continents of Europe and North America are concerned. The task for Great Britain and her Overseas Dominions has been placed in the hands of Dr. Brown Kelly, of Glasgow, who has associated with himself Drs. St. Clair Thompson and Logan Turner, of Toronto, and in their hands the work will be well done.

This British National Committee has placed itself in communication with the various provinces of the Dominion, and has appointed certain representatives. Dr. Birkett, of Montreal, has charge of the investigation for Quebec and the Maritime Provinces, Dr. Prouse for Manitoba, Dr. Boucher for British Columbia, and Dr. Gibb Wishart, for Ontario. Each organizer is allowed to appoint a small sub-committee, and is instructed to conduct examinations in all schools, orphanages, institutions for the blind and for deaf mutes, homes for incurables, hospitals, lunatic asylums, sanatoria for consumptives, creches, military barracks, and all other institutions containing large numbers of persons.

It is hoped that in the above way the co-operation of such a host of workers will be secured that the investigation will result in clearing up the difficulties referred to in the words already quoted from Professor Alexander. Assistance will be welcomed from every medical man who is desirous and capable of taking part in the work, or who has material bearing on the subject, and, particularly, from the medical officers in charge of the various institutions.

The next congress will meet in Copenhagen in 1915, and the central committee are desirous that all reports should be in their possession within two years from now.

KING EDWARD SANATORIUM, BRITISH COLUMBIA

THE fifth annual report of the medical superintendent of the King Edward Sanatorium at Tranquille, British Columbia, shows that during 1911 the work of the Anti-tuberculosis Society has materially increased. A larger number of patients have been treated than in any previous year in the history of the institution: this has been made possible by the increased accommodation afforded by the new building. During the year, one hundred and seventy patients were treated, ninety were discharged, and on December 31st, there were eighty patients in the sanatorium. Of these one hundred and seventy patients, 23·1 per cent. were incipient, 21·7 per cent. were moderately advanced, and 55·2 per cent. were far advanced cases. Of the incipient and moderately advanced cases discharged, 34·4 per cent. were apparent cures, 31·2 per cent. had the disease arrested, and 34·4 were unimproved. Since November 1st, 1911, forty-five applications for admission to the sanatorium have been received, nineteen of which were accepted. Owing to lack of accommodation, it had been necessary to refuse admission to twenty-six cases.

The old buildings, which provide for forty-two patients, are now reserved for far-advanced cases. Unfortunately, these cases are the most numerous, and the accommodation is far from adequate. These cases are a great menace to the health of the public and many of them come to the sanatorium in the last stages of the disease. In most cases, they have taken no precautions before entering the sanatorium to prevent the spread of the disease. For the great majority of these cases, there is little hope of a cure; but it is of the greatest importance that they should be cared for during the rest of their days, and that they should be isolated from the communities among whom they have lived and to whom they are a constant source of infection. To quote from the report: "As long as the advanced consumptive is uncared for, the crop of tuberculosis will continue to flourish."

In the treatment of patients, the lines adopted have been rest, fresh air, and graduated labour. Tuberculin has been given to selected cases with beneficial results. The average length of stay in the sanatorium was one hundred and nine days. The average duration of the disease in those who died was twenty-four and a half months.

Many improvements have been made in the buildings of the institution during the year. A new hospital building and a sleeping pavilion have been erected; and a new administrative building is in course of construction. The scientific work has been badly hampered by the lack of a proper laboratory. When the new laboratory in the administrative building is completed and fully equipped, it will be possible to do more thorough work in the direction of research. It is felt, also, that a workshop in the institution would be a great help. This would offer facilities for the instruction of patients in practical work and would afford them an interest in life which could be put into practical application after leaving the sanatorium.

HEALTH EXHIBITION

A NOVEL and interesting mode of stimulating public interest in problems relating to health is the Ontario Health Exhibit. The purpose of the exhibition is largely educational; it is intended to promote interest in questions relating to health, to educate the general public to a sense of the necessity for sanitation and a pure water and milk supply, and to teach them something of the methods for preventing the spread of infectious diseases. To give an added interest to the subjects considered, they are illustrated by means of moving pictures. Each city and town in the province is to be visited, and, with the help of local practitioners, problems relating to the preservation of health are to be discussed and explained. The plan was first suggested by Dr. McCullough, the provincial health officer. It is hoped that by this means much may be done to impress upon the public the necessity for early preventive treatment in tuberculosis and other similar diseases.

PREVENTION OF OCCUPATIONAL DISEASE

WE are informed by the Toronto *Mail and Empire* that a booklet is being circulated by the Chicago Tuberculosis Institute, urging the periodical examination of employees. The initial purpose of the suggested examination is the early detection of cases of tuberculosis, but the benefits accruing from such a course of action would apply not only to this disease. The health of employees has long called for more attention from those for whom they work. Vitiated air and dust weaken the worker's powers of resistance to disease, and dust-inhaling occupations predispose them to pneumonia and consumption. The employer of labour takes care of his machinery, but gives little heed to the health of his employee, even though it be adversely influenced by the nature of the work to be done. Is a machine of so much greater value than a human life? The workers, often through lack of money, sometimes through ignorance, neglect the necessary treatment of their physical ills until they are no longer able to work. Before they reach this stage,—perhaps during months,—they are inefficient labourers, they have not the strength to rightly perform their quota of work, and they are, in many cases, a source of infection to their companions. From a purely business standpoint, it would be better for employers to provide medical advice for their employees; some corporations have already done this. However, the need is one that cannot be satisfied by individuals, or by corporations working alone; the question is a public one and demands public consideration. Medical inspection of those employed in factories and workshops should be made compulsory and should be considered as a necessary part of public health conservation. Much has been done to conserve the natural resources of our Dominion, and the conservation of health is now receiving attention. A wide field for labour is presented in the prevention of occupational disease and in devising means to improve the physical condition, by medical examination and other means, of those employed in factories and workshops, who are too ignorant or too poor to conserve their own health.

THE HEALTH OF THE CHILD

IF the health of the community is to be improved, more attention must be given to that of the children. It is not sufficient that a child be taken to a physician after it has developed symptoms of disease; the direction must be "prevention" not "cure." Parents must realize that it is just as important that a child's body should be developed aright and guarded against harmful conditions, as that its mind should be trained and that it should be protected from evil influences. A child is sent to school and the parents are anxious that it should prove itself at least as quick and eager to learn as its companions. But is the same attention given to the state of the child's physical being? How many children suffer from adenoids whose parents are not aware of the fact? How many children are taught to breathe correctly? And how many ills result from a defect in vision which the parents have never noticed?

By means of the medical examination of children in schools and the work of the public health officers, much has been done, and is being done, to improve the health of children; but very much more could be effected if the health authorities were aided in this work by the co-operation of parents and those responsible for the well-being of children entrusted to their care. We see from the Virden *Empire Advance*, that in an address recently delivered before the Women's Institute, Dr. F. A. St. John stated that the two important ways in which medicine can best assist mothers in the care of their children are the medical inspection of schools and the public health laboratory. In an ideal inspection of schools, the health officer should furnish a report to the trustees, or school board, on the school building and the conditions existing in that building. He should also report to the parents on the condition of their children; this report should be made once a year. In this way, slight defects of hearing or vision, or slight curvature of the spine, etc., which, otherwise, in all probability would be unnoticed, would receive attention and many resulting ills would be prevented. In the laboratory, the milk supply, water, food, and even dust, should be regularly examined for any impurities, germs, or adulterations. In concluding his remarks, Dr. St. John suggests that the health officer should be regarded as a friend ready to give advice and assistance, and should no longer be looked upon as "an abnoxious personage who, with an impertinent curiosity, hunts round your backyards to see what you do with your refuse."

THE second official circular of the Seventeenth International Congress of Medicine has recently been issued. The dates of the congress, which is to be held in London, England, are August 6th to August 12th, 1913. Professor Chauffard is to deliver the address in medicine; Professor Harvey Cushing, the address in surgery; and Professor Ehrlich, the address in pathology. The circular contains the provisional programme of subjects in the twenty-three sections which will constitute the congress. Dr. W. H. B. Aikens, who is secretary of the Canadian committee, will furnish these circulars and any further information that may be desired, if application be made to him. The secretary's address is 134 Bloor Street West, Toronto.

A correspondent calls our attention to the provision of the medical law of France, which was enacted April 9th, 1898. Under this law a patient has the right to choose his own physician, and the employer is obliged to pay the fee. In no case may the employer compel a patient to accept the services of any other physician. Nor has the physician of an insurance company any special right to attend an injured person. An injured person cannot be compelled to enter a hospital, but may insist that he be attended at his own home by his own physician.

The Academy of Medicine, Toronto, has passed a resolution upon the subject of splitting of fees in the following terms: "a. That the payment of a commission to any person, or persons, who may be instrumental in influencing a patient, or patients, to apply for professional advice, is wrong in principle, and detrimental to the best interests of our profession. b. That when two or more practitioners are engaged in a case, the disposition of the respective fees shall only be made with the knowledge and consent of the patient." This resolution is good ethics and good sense, and the final clause,—we agree that the attending physician has often been inadequately paid for his services,—will meet with the commendation of the general practitioner at least.

At a meeting of the Vancouver civic health committee, which took place April 19th, Dr. Underhill, the medical health officer for that city, spoke of the lack of attention to backyards and vacant lots on the part of landlords and tenants. He stated that many of the yards are in a disgracefully dirty and untidy condition and frequently act as receptacles for old tins, barrels, paper, boxes, etc. The vacant lots, also, he said, often serve as dumping grounds for refuse and, in many cases, are disfigured by insanitary shacks or frame structures. That such conditions are a great source of danger to the health of the citizens is self-evident, and it is impossible for the health authorities of any city to prevent infection arising in this manner unless supported in their efforts by the co-operation of the general public. Much could be done in this direction if each individual tenant would see that the property occupied by him were kept clean and tidy, and if landlords would pull down the insanitary—and oftentimes rotten—shacks and buildings and erect modern structures in their place.

At the meeting of the Edmonton Board of Health, which took place May 9th, Dr. Revell, provincial analyst, suggested that the city of Edmonton and the province of Alberta might co-operate in the use of the provincial and bacteriological laboratories. As there is a good laboratory in the city, and as Edmonton is hardly large enough to support a complete laboratory of its own, Dr. Revell considered that some arrangement might be made with the provincial authorities, whereby the city could pay the salary of a bacteriological assistant whose particular duty would be to look after the work in connexion with the city. Dr. Revell also spoke of the examination of milk. He stated that the examination of milk in a laboratory could only determine whether the milk was diseased, and that the best way to improve the supply was by personal contact with dairymen; this, of course, could best be effected by inspectors who would visit the various dairies and personally investigate the conditions existing in them. Dr. Revell also stated that he considered that the water obtained from the Saskatchewan should be examined frequently, as the character of the water is constantly changing.

The practical work of the Army and Medical Corps which was recently encamped on Carling's Heights began on Monday, June 3rd. Lieutenant-Colonel G. C. Jones was in command,

and Lieutenant-Colonel Fotheringham the administrative medical officer. The camp was the first of its kind held in Canada, and, therefore, is of particular interest. Fully five hundred men, from the Fifteenth Field Ambulance of London, the Fourteenth of Sarnia, the Tenth and Thirteenth of Toronto, and the Twelfth and Nineteenth of Hamilton, took part in the manœuvres, and, for the first time in this country, the field ambulances operated under conditions as closely allied as possible to those of actual warfare. The various situations likely to arise out of the different classes of engagements were considered from a medical standpoint, and the removal and treatment of the injured effected under circumstances as nearly as possible like those of the battlefield. Four officers were selected to judge the work done by the corps. Especial attention was paid to camp sanitation and an effort was being made to train the men in the methods of preventing disease in camps.

The annual meeting of the Prince Edward Island hospital board was held at Charlottetown on May 30th. From the twenty-ninth report of the hospital, for the year 1911-1912, we learn that the total receipts of the year only amounted to $9,811.21, as compared with $10,373.17 for the previous year. The endowment fund has been increased during the year by certain legacies, and now amounts to $20,589.46. Four hundred and nine patients have been admitted to the hospital during the year; of these, two hundred and seventy-nine were surgical cases. Ninety-nine non-paying patients received treatment.

The number of patients is increasing every year and additional accommodation will be required within a very short time. It is regrettable that, instead of increasing in proportion to the demands made upon the hospital, the subscriptions received during the year have decreased, the total amount subscribed being less than that received during the previous year. The amount received in fees has also been comparatively small, owing to the large number of non-paying patients who have received treatment. If the work that is being done by the hospital is to continue, a more generous support from the public is very necessary.

THE difficulty of obtaining medical assistance in remote districts is sometimes a very serious one in spite of modern facilities for travel. This difficulty is the subject of a letter written by Dr. W. T. Grenfell, and published in a recent issue of the St. John's *Telegram*. In 1910, a petition was signed by the people of Pilley's Island, a small island situated in Green Bay off the coast of Newfoundland, asking that a doctor might be sent to them, as there was no physician within thirty miles. In the spring of 1911, Dr. Harrison Webster and Dr. Hugh Greely volunteered to give eighteen months' free service, in order to find out whether it would be possible to establish a hospital on the island, which, with the aid of a small government grant, would eventually be supported by the residents. Two trained nurses also offered their services, —one a volunteer, the other on part pay. A temporary hospital was established and work commenced. During the winter months great difficulties were experienced owing to the inaccessibility of the island and the lack of any means of transportation. In spite of these difficulties, fifty patients received treatment at the hospital during the first six months of its existence and of these forty-five were surgical cases. The hospital contains ten beds, which would be filled, probably, all the time during the summer months. The population of the island is not large and the question of expense is a difficult one; even with the assistance of the five hundred dollars granted by the government, the residents could not maintain the hospital. It is probable, therefore, that a hospital will be established at Exploits in Green Bay, rather than at Pilley's Island. This would obviate some of the transportation difficulties, and the hospital would still be accessible to patients coming from Pilley's Island.

Book Reviews

A SHORT PRACTICE OF MEDICINE. By ROBERT A. FLEMING, M.D. Second edition; price $3.50. Toronto: The Macmillan Company of Canada, 1912.

The merit of this book, apart from its authorship, is that it is short, that is, it contains fewer than a thousand pages; that it is printed as well as Clark, of Edinburgh, can print,—which is saying a good deal; and that it is published by the Macmillan Company, of Canada. The book is a favourite in the Edinburgh Schools, not alone because Dr. Fleming is physician to the Royal Infirmary. He has employed the space at his disposal to good advantage and produced a book which has for five years met the rather strict requirements of the Edinburgh student. This is the second edition and it serves admirably in expressing the author's intention.

ANÆSTHETICS. A PRACTICAL HANDBOOK. By J. BLUMFELD, M.D. Third edition; price, 3s. 6d, net; 22 figures. London: Baillière, Tindall and Cox, 1912.

The question between chloroform and ether appears to us to be fairly judged by Dr. Blumfeld; and as we should expect from a lecturer in St. Mary's Hospital, the doctrine which Professor Waller so sedulously taught, receives due appreciation. Professor Waller has always insisted that a death occurring from the administration of chloroform should be made the subject matter of a coroner's inquest, and that chloroform can be administered with perfect safety provided the anæsthesist knows his business. This is the third edition of a book which has already commended itself to the profession and is made the more complete by the description of the open method of using ether and preliminary hypodermic injections. Local and spinal analgesia has also received attention.

THE PRACTICE OF MEDICINE. By FREDERICK TAYLOR, M.D., F.R.C.P. Price, $5.00 net. Ninth edition. Toronto: The Macmillan Company of Canada, Limited, 1912.

To one who was familiar twenty years ago with Taylor's "Practice of Medicine," the present volume comes with surprise.

At that time it was a little book which was carried in many a student's pocket and brought him help against the hour of need. In the intervening years the cherished volume has grown to over 1100 pages and now takes its place by the side of the largest and best of them. A previous revision was made in 1908, but this is practically a new book and is, we notice, published by the Macmillan Company of Canada. It should make a special appeal to Canadian students for this and for other durable reasons. It is a model of good writing and possesses all the authority of the distinguished author.

HARELIP AND CLEFT PALATE WITH SPECIAL REFERENCE TO THE OPERATIVE TREATMENT AND ITS RESULTS. By JAMES BERRY, B.S. (LOND.), F.R.C.S. and T. PERCY LEGG, M.S. (LOND.), F.R.C.S. With 240 figures and appendix of cases of operation for cleft palate; price, 12s. 6d. net. London: J. and A. Churchill, 1912.

This book of 324 pages with 240 figures is devoted entirely to a description of harelip and cleft palate, and to the operative treatment, and results of these conditions. So large a book upon so fragmentary a portion of surgery is bound to be comprehensive. The merit of the book lies largely in the illustrations. In the case of harelip they have been done from photographs, but for cleft palate drawings were made from casts by an artist who was present at the operations. The author remarks in the preface, that the results obtained from the turnover flap operation are usually bad. We cannot readily imagine that a surgeon would be willing to continue operating upon patients suffering from this condition without familiarizing himself with the contents of this monograph.

ESSAYS AND CLINICAL STUDIES. By F. G. CROOKSHANK, M.D. Price, 7s. 6d. London: H. K. Lewis, 1911.

We have frequently remarked with approbation the increasing tendency of medicine to clothe itself in literature, and not rarely one is gladdened by a book upon medicine which is not merely a bald relation of fact. Dr. Crookshank in his "Essays and Clinical Studies" has entered into this field of literature and ranges over such subjects as Ramazzini, insanity, hysteria, phthisis, scarlet fever, diphtheria, public health, and the examination of "bodies found in the river." By the "river" we suppose that he refers to the Thames, but probably the description would be equally applicable to bodies found in other waters of the same degree of salinity.

Dr. Crookshank is surgeon to the Thames Division of the Metropolitan Police and has used most carefully his opportunities for observation. Contrary to the common belief, he states that suicide by drowning is much less common with females than with males. Many of these essays will be familiar to readers of the *Practitioner*, the *Journal of Public Health*, *Journal of Mental Science*, and the *Clinical Journal*. But all will be glad to have them collected in convenient form for reading and reference.

WHEELER'S HANDBOOK OF MEDICINE. By WILLIAM R. JACK, M.D. Fourth edition; price 8s. net. Edinburgh: E. & S. Livingstone, 1912.

This, the fourth edition of "Wheeler's Handbook of Medicine," is, as usual, by Dr. Jack. The first edition appeared in 1894, and many changes have taken place in medicine since that time. But Dr. Jack has recorded them all, even at the cost of replacing most of the material which originally came from Dr. Wheeler's hand. The aim of the book is now, as it has always been, to correlate symptoms with the facts of anatomy and physiology. Tables and parallel columns are used with good effect and there is a freshness in the editing which all students will appreciate.

TUMOURS OF THE JAWS. By CHARLES L. SCUDDER, M.D., Surgeon to the Massachusetts General Hospital. Octavo of 391 pages, with 353 illustrations, 6 in colours. Philadelphia and London: W. B. Saunders Company, 1912. Cloth, $6.00 net; half morocco, $7.50 net. Canadian agents, The J. F. Hartz Co., Limited, Toronto.

The book is one of more than usual interest because of the importance and rarity of the conditions with which it deals, and because it is one of the first American text-books devoted to "Tumours of the Jaws." As remarked by the editor, no one physician meets with many cases. It is all the more important, therefore, that each case should be reported and that the accumulated experience of years be presented in the form of a monograph.

One is often disappointed in turning to the usual text-book of surgery for help in the diagnosis, pathology, indication, and methods of treatment of tumours of the jaws. The present book seems to fill a much felt want, and is one that can be heartily commended to the general practitioner and to the surgeon. The benign and malignant conditions are clearly defined, and an excellent description given of the more common as well as the rarer forms of tumours involving the jaws.

The chapters on sarcoma, odonomata and carcinoma of the jaws are very full, the illustrations are numerous, distinctly illustrative, and helpful. The book is easily read and easily understood.

In addition, there is a chapter on tumour of the palate, one on Leontiasis ossea, and one on prosthesis.

The diagnostic points and differential diagnosis between the various conditions are clear. The plates illustrating operative procedures are well drawn, and are made to show the different stages in a very distinct manner.

DUODENAL ULCER. By B. G. A. MOYNIHAN, M.S., (LOND.), F.R.C.S. Second edition; enlarged; illustrated. Philadelphia: The W. B. Saunders Company, 1912.

The appearance of a second edition, two years after the first, indicates the interest of the profession in duodenal ulcer and in Mr. Moynihan's views on this important subject. The changes in the text in the second edition of this important work have been chiefly concerned with the differential diagnosis of duodenal ulcers and the results of *x*-ray examinations of the stomach after the administration of bismuth. There are few subjects of greater interest to the medical profession at the present time than that of duodenal ulcer, and, although much has been written upon it, and a very considerable number of cases have been operated upon, as a rule with happy results, yet the subject is still bristling with questions. Mr. Moynihan attempts to clear up some of these. On some questions his views appear to be somewhat modified. He now advocates a view, which would appeal to many as correct, that while the ætiology of gastric and duodenal ulcer is as yet not definitely determined, yet they are probably due to some toxemia. In this way Mr. Moynihan accounts for its frequent association with chronic disease and adhesions about the appendix. He also says that he has occasionally found Lane's kink present and it is altogether likely that any condition interfering with the intestinal peristalsis, or leading to intestinal stasis, may be a contributing factor. In two of his cases the ulcer was definitely tuberculous.

The chapter on the differential diagnosis of the conditions that mimic duodenal ulcer is of interest. The book is well written and the discussions of many of the points of duodenal ulcer are full of interest.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

THE INFLUENCE OF CAFFEIN ON MENTAL AND MOTOR EFFICIENCY. By H. L. HOLLINGWORTH, Ph.D. New York: Science Press.

THE CARE OF THE INSANE AND HOSPITAL MANAGEMENT. By CHARLES WHITNEY PAGE, M.D. 154 pages; price $1.00. Boston: W. M. Leonard, 1912.

PROCEEDINGS OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION. Sixty-seventh annual meeting, Denver, Colo., June 19th to 22nd, 1911. American Medico-Psychological Association, 1912.

SIXTH ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE FOR THE STUDY, TREATMENT AND PREVENTION OF TUBERCULOSIS, 1908-1910. University of Pennsylvania, 1912.

ANÆSTHETICS. A practical Handbook. By J. BLUMFELD, M.D. Third edition; price, 3s. 6d.; 22 figures. London: Baillière, Tindall and Cox, 1912.

REPORT FROM THE PATHOLOGICAL DEPARTMENT AND THE DEPARTMENT OF CLINICAL PSYCHIATRY, Central Indiana Hospital for Insane, for the years 1909-1910 and 1910-1911. Vol. IV. 1912.

A TEXT-BOOK OF MATERIA MEDICA AND PHARMACY FOR MEDICAL STUDENTS. By V. E. HENDERSON, M.A., M.B. Toronto: University Press.

TRAITEMENT DE LA DIPHTHERIE. By DR. BRELET. Price 1 franc. Paris: Librairie O. Berthier, Emile Bougault, successeurs.

COMMISSION OF CONSERVATION, CANADA. Report of the Third Annual Meeting, held at Ottawa, January 16th, 1912. Montreal: John Lovell & Son, Ltd.

LES MEDICAMENTS EN CLINIQUE. By FR. SCHEFFLER. Price 4 francs. Paris: Librairie O. Berthier, Emile Bougault, successeurs, 1912.

PRATIQUE MEDICO-CHIRURGICALE A LA CAMPAGNE. Notes et Observations. By DR. LEGRAND. Paris: Librairie O. Berthier, Emil Bougault, successeurs, 1912.

THE THEORY OF SCHIZOPHRENIC NEGATIVISM. By PROFESSOR E. BLEULER. Nervous and Mental Disease Monograph Series No. 11. New York, 1912.

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Res Judicatæ

A MEDICAL MISSIONARY

TO a great extent the revolution and the famine in China have brought out more vividly the "what's the use" of some phases of missionary life, for the missionary has been truly "a very present help in time of trouble." For a nation the size of China, with its immense ignorant population, it is a wonderful, almost incredible, thing that there has been relatively little bloodshed during the civil war; the loss of life has been less than in some single great battles in history. With the exception of the battles at Hankow, there has been very little real warfare, and one can scarcely believe a dynasty has been overthrown and a republic born. No human being can tell what will yet be the outcome; China has given the world many big surprises before this and no doubt there are more "up her sleeve."

Although my station is two thousand miles interior on the banks of the Yangste, yet I have had the privilege of doing Red Cross work one thousand five hundred miles down the river at Hankow, and famine relief work some five hundred miles farther, on the line of the Grand Canal, because consular pressure compelled me to leave the province of Szechuan and to come down river. No attempt will be made to describe the dreadful sights of the gloomy, blackened, desolate, crushed, and deserted city; the scenes of carnage and rapine will be mentioned only to show how seriously the affair was regarded by other nations: there were fourteen war vessels belonging to England, Germany, America, France, and Russia at anchor off the Bund, and on shore the soldiers and marines of these countries continuously guarded the streets. In the foreign concessions, every street corner was guarded by maxime guns surrounded by fortifications of brick, dirt, or stone—every street leading from the native city being walled up with brick. When the hospitals were visited one soon found the earnest for all the formidable preparations; it was dreadful indeed.

The wounded were so numerous and the wounds so serious that it was necessary to improvise hospitals, which were manned chiefly by missionary physicians, although the Germans, Japanese, and Chinese had opened work as well. Warehouses were utilized for impromptu hospitals, and even a church was used: the benches forming the beds in the latter case and the large shelves in the case of the former. There were two Red Cross societies at work; the president of one, Dr. MacWillie, was a Canadian, and the executive head of the other—while the writer was in Hankow— was Dr. Barrie, also a Canadian. My work was in the large, unfinished building of the International Hospital. It was very crowded; the patients were chiefly soldiers, both imperial and revolutionary; only a few had beds, most of them were on the floor, lying so close together that one could not step between them, sixteen patients being in a room measuring twenty by fifteen feet. The patients were clothed, as a rule, in the same clothes in which they were wounded some weeks before; all smoked *ad lib.;* they also brought all kinds of food, and had clothes, food, tobacco, money, and various other articles—including matches, pipes, bowls, and chopsticks—all piled about them, and with the well-known propensities of the Chinese for spitting and blowing noses, and their other uncleanly habits, certainly the first sight was nauseating; when one adds to all this the reek of the putrid wounds and the smell of iodoform the picture seems bad enough, but the odour was beyond description.

Hospital work in China is not as it is at home. The Chinese, as a rule, dreadfully fear the knife, and that combined with beliefs and supersitions founded on religion makes the life of the surgeon no bed of roses, and cleanliness, even in a well-conducted missionary hospital is only obtained under constant vigilance. The following instance is an example of the way the higher class Chinaman regards surgery: at the present time President Yuan Shi Kai's son is ill, resulting from a blow on the head caused by a fall from a horse. The president sent to Shangai for Dr. Sharp of the Harvard Medical School of China. The doctor was informed there would be no operation, because the blood of a son of heaven must not be contaminated by the hands of the surgeon,—it was already pure, and healing would result!

To return to our Hankow patients, many of them were in a dreadful condition resulting from various causes, chiefly because they did not receive proper treatment early enough after being wounded; that is, they were not found, or refused assistance, or would not allow the surgeon to do what he thought best, or, worst of all, had been treated by Chinese doctors before they entered the hospital. There were ununited fractures of all of the long bones caused by bullets and shells, practically every one infected, the whole limb being a collection of pus cavities, the fascia and muscles dividing the different foci and, at times, the whole shaft bathed in a continuous pocket of evil-smelling pus. It was surprising how many would allow you to operate after they became thoroughly acquainted and after a few had been successfully operated upon,—in fact, before the end there were less than ten who were not operated upon as the surgeon wished, and all had been operated upon to some extent. As a result there were only two deaths in six weeks. At the end of six weeks, the fighting having stopped, the temporary hospitals were closed and the remaining patients distributed to the missionary hospitals.

As to treatment, we did from sixty to one hundred dressings a day, and our method was free incision, after application of tincture of iodine to the site of the cut, flushing very freely with weak pot. perm. solution. Drainage tubes and dressing as usual. One case had rubber tubes totalling one and a half yards. There were, of course, many amputations and more bone operations. One of the leading missionary surgeons told me he had had at least twenty cases where there were bullet wounds through the abdomen, and two or more with two bullets into and through the abdomen. All of these got well—treatment: tr. iodine to the wounds of entry and exit. One case at the International Hospital had had a bullet through the occipital region about one and a half inches behind the ear; recovery was complete as far as wounds were concerned, but mentally he certainly was not normal; his previous history was unknown.

The time I spent in famine relief work was rich in experience. Whenever we foreigners worked in the famine districts we went in pairs. The need for relief was so urgent that we could not wait until the districts were quiet, so we went without military protection. The whole country was in a state of absolute anarchy. Wholesale, widespread looting, murder, and rapine still continued. Cities and towns were attacked and robbed by the soldiers—robbers whenever or wherever their evil desires dictated. Although the only instance where a foreigner was in imminent danger, as far as we knew, was when his convoy of grain boats was attacked by robbers and one coolie killed, none of us knew for certain when our time might come; so it was a bit nerve racking, especially when the native helpers would themselves get frightened and come to us for courage and comfort.

When morning after morning one finds people lying round dead in a public convenience; when one sees people dying of starvation by the roadside; when one knows positively of a woman burying a still living child because "she had no food and it had to die anyway"; when one knows that dogs dig up the freshly buried and eat them because even they are starving to death; when one knows of people eating a dog that had died; when one sees, handles, and smells food being eaten and that food composed of a cake made of grasses, barks, roots, and weeds, with a few kernels of wheat scattered through it, from all appearance dried cow manure; when one sees every article that the house possesses, even to the roof, either burned or sold for food; when one sees the glossy, pastey, tightly drawn, dark coloured, wrinkled skin, projecting cheek bones, and the teeth covered with sordes, or, on the other hand, the swollen faces, hands, and feet, and even general anasarca, which indicate the person about to die of starvation; when one sees, examines, and treats people poisoned by the weeds and grasses they had been forced to eat for food; when one sees thousands of people begging on their knees for a chance to work for food and that food either bean cake, i.e., the remains of beans after the oil has been pressed from them, which are used in normal years principally for manure, or Kao liang, that is a seed of a species of corn used for feeding pigs or making alcohol; when the one member of a family to whom a ticket entitling him or her to work for the food payment and thus feed five or six mouths, is so weak that he or she can earn only one hundred and forty-four cash a day—seven cents gold a day—and that after the wage paid is nearly double the ordinary wage; when the people would simply crowd around for medical and surgical relief from ulcers, sores, abscesses, eczemas, skin diseases, poisoning, and famine fever resulting from a starvation diet;—it seems to me there was urgent need of the missionary physician.

Relief has been given without pauperizing and only in return for labour, except in the cases of those too old or too diseased or crippled to work, and the labour performed counted for preventing future floods because all work was done either in building ditches or repairing permanently the banks of the Grand Canal. To superintend the building of a canal bank nearly three miles long, seventy-five feet wide at its base, thirty-two feet wide at the top, and twelve feet high, was my immediate job. Here five thousand men and women worked like ants in well-ordered confusion, and, since every grain of earth was either carried in baskets or on wheelbarrows, it was a busy scene. There were many annoying happenings, for the Chinese are adepts in cheating, and one's justice had to be tempered with mercy.

I have written, possibly, too much, but perhaps I have shown, in some measure, the earnest for missionary work from a different standpoint to the customary one.

Shangai, China. W. R. M.

Retrospect of Surgery

BEITRAGE ZUR PATHOLOGIE UND THERAPIE DER SYPHILIS. BY A. NEISSER, BRESLAU. BERLIN, JULIUS SPRINGER, 1911.

THE well-known syphilographer, who has done so much advanced work in the domain of syphilis, has gathered together in this fascinating volume of over 600 pages the results of his Java expedition of 1905 to 1908. Stimulated by the successful results of syphilitic animal experimentation on the higher apes demonstrated by Metchnikoff and Roux, in 1903, he formed the design of continuing experiments begun in Breslau in a tropical station, where an unlimited supply of the higher and lower apes could be secured, and his researches carried out upon a much larger scale than was possible in Europe. So enthusiastic was he, that the expedition was equipped at his own personal expense, and only later did the German government come to his aid and assume the financial responsibility of the undertaking.

While the expedition was undertaken particularly for studies in syphilis, the opportunity of studying at close range the numerous tropical diseases met in Java was too attractive to be neglected. Important in this respect were the researches of von Prowazek in trachoma, which resulted from the expedition, though they are not reported in this publication.

The station was set up in Batavia early in 1905 with every convenience for their own comfort and laboratory research, and for the care of the thousands of animals used. Neisser himself was in in charge, aided by several assistants and dieners from his Breslau clinic, and a numerous Malay personnel. In the vicinity was a military hospital with an abundance of human syphilis, whence the material for inoculation on apes was obtained to commence his work. At no time was there a scarcity of animals, for the planters, who find the monkeys a pest on their plantations, willingly supplied him with an abundance of material.

Thousands of inoculations were carried out in the three years of the station's activity, and while the results of this expedition have been somewhat over-shadowed by the epoch-making discoveries of Schaudinn, Wassermann, Ehrlich, and Noguchi, they are, none the less, not the least valuable of the contributions to syphilography in which the last decade has been so rich.

Over twelve hundred primary sores were produced in apes. Interesting were the variations in the incubation period, from eleven to seventy-five days, which ought not to surprise any one cognizant with human syphilis. The pathology of the lesions in the apes does not differ from that of man. Higher apes have a greater disposition for syphilis than the lower, and inoculations succeed more frequently and are effected more easily in the former than in the latter. The higher apes can be inoculated on any part of the body, whereas, in the lower, inoculations are only successful on the eyebrows, eyelids, and on the penis. Moreover, generalization of the syphilitic virus can be detected in clinically recognizable symptoms in the higher varieties, whereas such in the lower varieties are of the greatest rarity.

The lesions of primary, secondary, and tertiary syphilis were capable of reproducing the disease. Interesting from a clinical standpoint is this demonstration of the theoretical infectiousness of the tertiary lesion. The deductions that logically follow are, that every tertiary lesion must be regarded as contagious, as harbouring the spirochæta pallida, and that every person with a tertiary lesion must be treated like any other syphilitic, that is, not merely with potassium iodide, but with the remedies considered specific for the spirochæta pallida, salvarsan and mercury; and not merely once to cure the lesion, but in the chronic intermittent manner, that recurrences may be prevented and the last remaining spirochæte destroyed.

Primary sores were most easily inoculated; glands, both primary and secondary, blood, and the internal organs produced successful inoculations. As many as fifteen fully developed primary sores were produced in an orang-utan. The method of inoculation usually followed was that of scarification. Curiously enough successful subcutaneous inoculations were produced with great difficulty, in marked contrast to the comparative ease of intravenous inoculations. The organs most easily inoculated were the spleen, bone-marrow, liver, and testicle. The success of his blood inoculations reveals how much more frequently the syphilitic virus circulates in the blood than has been hitherto assumed.

Most instructive are Neisser's results with regard to the time of dissemination of the syphilitic virus. This has been shown to take place much earlier than was generally believed. Excision of the site of inoculation, carried out eight hours after inoculation, was unsuccessful in several cases in preventing the outbreak of the disease. Even more important than these experiments in aborting the disease were the experiments with the inoculation of the internal organs of infected animals at varying periods after inoculation. It was shown that as early as eleven days after inoculation the internal organs were virulent, or, in other words, that the syphilitic virus has disseminated itself throughout the body long before the primary sore has made its appearance, and that the primary sore is, in fact, but an evidence of an already generalized disease.

Interesting chapters are devoted to the theoretical consideration of various problems in syphilis; the question of "Umstimmung," the altered reaction of the tissues in response to the syphilitic organism, the problems of immunity in syphilis, the question of super-infection and of re-infection. Super-infection is only possible before the appearance of the primary sore and before the development of the condition of "Anergie," a term coined by Siebert, and indicating the refractoriness of the body to a super- or re-infection, while still under the influence of the agent producing the disease. Following the primary sore and the development of this state of "Anergie," and practically throughout the existence of the syphilis, super-infection is not possible. The apparently immune persons or animals are still syphilitic. There is no real immunity in syphilis. If the person is healed, re-infection is at once possible. These considerations have been beautifully demonstrated by Neisser's animal experiments in Java.

Experiments in the production of active or passive immunity were alike unsuccessful.

It is impossible even to refer to all the points in this most interesting publication, which contains a complete review of the literature on the Wassermann reaction by Bruck, for this valuable diagnostic method was an indirect result of the expedition, inasmuch as Wassermann commenced his work at the instigation of Professor Neisser, and Bruck was his first collaborator. Experiments were also conducted in Batavia on personal prophylaxis, and on the effect of treatment of animal syphilis by every conceivable medicament and method.

Interesting are Neisser's observations on the syphilis in Java, for this country has by no means escaped its ravages. For the most part, the disease is neglected in the primary and secondary stages. As a result, tertiary syphilis is very common, mostly of skin and bone, with frightful deformities. Visceral and nerve syphilis are seldom observed. Tabes and general paralysis do not occur, a fact which Neisser ascribes to the almost total abstinence of the Malay population.

F. S. PATCH.

The Following is a Synopsis of the Work Presented at the Annual Meeting of the American Orthopædic Association, furnished by B. E. McKenzie, B.A., M.D.

DR. V. P. GIBNEY, president, presided at most of the meetings. Wednesday, the 29th of May, was spent in New York, visiting the various hospitals.

In the service of W. R. Townsend a number of operations were performed for the benefit of those present, more particularly Whitman's operation for talipes calcaneo valgus. This operation, by which the astragalus is removed and the foot displaced backward, so that the body weight rests on the anterior part of the os calcis, corrects the deformity. Numerous results of sufficiently long standing prove the operation to be a most satisfactory one.

Dr. Henry Ling Taylor, showed a case of Madelung's deformity, this being a curvature near the lower end of the radius, carrying the hand forward and making an apparent dislocation backward of the ulna. A linear osteotomy at the point of bending, replacement of the lower end of the radius, together with the hand, enable the ulna to be brought to position and gives a satisfactory result.

Dr. Roberts showed a most satisfactory and yet very simple arrangement for horizontal suspension of a patient while applying a jacket for Pott's disease, or a spica when required about the pelvis and thigh.

Drs. Gibney and Henry Ling Taylor showed cases of abcess in the posterior mediastinum resulting from tubercular disease of the vertebræ. In both cases the abcess had been reached and drained by removal of sections of the ribs close to the vertebræ, improvement was immediate and the prospects for final recovery hopeful.

At the Rockefeller Institute, Drs. Clarke, Draper, and McCrudden spoke at length, illustrating by animals the effect of experimental work in the injection of the virus of anterior poliomyelitis.

At the Mount Sinai Hospital, Dr. Nathan exhibited cases of arthritis deformans, which had been treated with thymus gland extract with advantage. An extract prepared by Burrowes & Welcome was employed in doses varying from five to ten grains.

An interesting operation in bone transplantation demonstrated the feasibility and the great outlook there is for work along this line, almost the entire shaft of the tibia being removed because of necrosis through osteomyelitis and the cavity being filled in by a transplant from the crest of the other tibia. A case was also exhibited where a similar operation had been done three months previously to supply a lack in the horizontal ramus of the inferior maxilla, the part being removed because of osteosarcoma. In the case of osteomyelitis of the tibia after removal of the sequestrum, being almost the whole diaphysis, the cavity was swabbed with tincture of iodine, and the transplant, which was nearly six inches in length, was laid in the cavity and covered by what remained of periostum, fascia, and muscle.

At St. Luke's Hospital, Dr. Robert Abbe showed cases exhibiting the result of treatment of giant-celled sarcoma by radium; specimens of Paget's disease were also shown.

At the Post Graduate Hospital, Dr. Cilley showed a very gratifying result, following traumatic flat foot, the work extending over about two years and consisting largely of manipulative work from time to time for the replacement of the foot in a normal position.

A matter of great interest and of great promise was Albee's operation upon the spine for cases of tuberculous spondylitis. In this operation the spinous processes of the vertebræ, and the supra spinous ligament are split over the diseased area so that a transplant can be lodged in the cleft, the transplant having been removed of sufficient length and width from the crest of the tibia. The operation has been performed some thirty-seven times during the last fourteen months and several of the patients were shown. Specimens from dogs were shown also, where the operation had been performed upon the vertebræ, demonstrating clearly that the graft transplant becomes firmly attached to the freshened bone of the spinous processes. A bridge of bone is successfully developed which becomes a powerful means of fixation, which is the chief factor in aiding recovery from this disease.

Albee also showed an operation which is performed upon the hip, chiefly for painful rheumatoid conditions, but sometimes also for tuberculosis. In this he cuts away the upper portion of the head of the femur, frees the head as much as possible from its cartilage, and in a similar way removes the cartilage from the upper portion of the acetabulum and replaces the head in the cup. This gives rise to an ankylosis, and in dressing the part of the limb can be placed in a position of election. The results are highly satisfactory. These two latter operations are pregnant with great promise of service.

At the meeting in Atlantic City the president, Dr. V. P. Gibney, spoke at some length, making suggestions as to the quality of the work which ought to be done in the immediate future by the members of the association.

Drs. Bartow and Plummer, of Buffalo, presented a valuable paper on the use of intra-articular silk ligaments for the purpose of giving greater fixity to paralytic joints. This work, reported upon a year ago, has been carried on in a much larger number of cases and the technique has been improved. The operation is comparatively simple and the results highly beneficial.

On the last day of the meeting Dr. J. B. Murphy, of Chicago, Dr. G. W. Davis, of Philadelphia, and Dr. Albee, of New York, all spoke at considerable length with reference to the matter of transplanting bone, and pointed out the almost uniform success with which it was attended for a number of purposes, especially (1) for overcoming non-union in fractures; (2) as an aid in ankylosing the spine in tuberculosis of the vertebræ; (3) in the replacement of lost bone, either through traumatism or disease. It was also pointed out that there is a good prospect that it could be used for securing ankylosis at the knee and in the sacro-iliac joint, and possibly in other cases of difficult or painful conditions at the hip joint.

The meeting, from a scientific standpoint, was one of the most successful which the Orthopædic Association has ever held, and is the first meeting entering upon the second quarter of a century of its history.

An important organization to be known as the North Pacific Surgeons' Society, was formed on Saturday in Portland, Oregon, for the purpose of advancing the science of surgery throughout the Pacific coast. The society started out with twenty-five charter members, which will be the maximum number, although the number of ordinary members may be increased to sixty.

Dr. J. A. K. Mackenzie, of Portland, was elected first president of the society and Dr. O. M. Jones, of Victoria, vice-president. Dr. Jones was accompanied to Portland by Dr. Hermann Robertson, of Victoria, the other two representatives of British Columbia being Dr. G. V. Lockett and Dr. Monro, of Vancouver. All of these subscribed their names to the charter roll of the new society, the membership of which is confined to surgeons in the states of Oregon, Washington, and the province of British Columbia. *Vancouver Province*, March 15th, 1912.

Obituary

DR. GEORGE BURNS died at Aylmer, Ont., June 10th, in the seventy-third year of his age. Dr. Burns was born in Southwold, Ont., and for the past forty years had practised medicine in Hanover, Kansas.

DR. HILTON WATERMAN recently died in New York. Dr. Waterman was born in London, Ont., and was in the forty-first year of his age.

DR. C. E. VAILLANCOURT, of S. Anselme, Que., died June 7th. Dr. Vaillancourt, who was in his sixty-fifth year, was a well-known physician in S. Anselme, where he had practised for many years. Dr. Vaillancourt was at one time mayor of S. Anselme, and from 1892 to 1896 was a member of parliament for Dorchester County. He is survived by a widow, five sons, and two daughters.

DR. J. W. LANE, of Brockville, died June 7th. Born in Williamsburg in 1847, Dr. Lane spent some years in the teaching profession before he entered Queen's College, from which he graduated in medicine. Dr. Lane then went to Mallorytown, where he has practised for thirty-six years and where he has been a prominent leader, not only in his chosen profession, but in all public and civic affairs. Dr. Lane was one of the oldest coroners in the province, medical health officer for Mallorytown, ex-reeve of Front of Yonge, and a veteran of the Fenian Raids of 1866 and 1870. He was an enthusiastic Mason, a Liberal, and a Presbyterian. Dr. Lane was a member of the Ontario Medical Council, of which he was president for one term.

DR. A. F. MAVETY died June 8th. Dr. Mavety, who was a graduate of Queen's University, practised for some years in Kingston. For the last eighteen years Dr. Mavety had practised in Detroit.

DR. F. R. BRANSCOMBE, of Corn Hill, N.B., died in the Mary Fletcher Hospital at Burlington, Vermont, June 24th. Dr. Branscombe had just completed his course at the University of Vermont School of Medicine, and was considered one of the best men in his class; his death occurred two days before the diplomas were given. Dr. Branscombe was the son of Mr. J. H. Branscombe, of Corn Hill, N.B., and was born in 1882. He graduated from the provincial normal school at Frederickton in 1902, after which he spent several years as a teacher. Dr. Branscombe was a young man of high principle, a popular student, and was greatly respected by all who knew him.

Dr. J. H. Wilson, of St. Thomas, Ontario, died June 4th. Dr. Wilson was one of the most prominent figures in public life in Western Ontario, and his loss will be greatly felt in St. Thomas, where he has practised for many years. Dr. Wilson was born in Ottawa in 1833, and graduated from Toronto University in 1857. Dr. Wilson then spent a year at the New York University, after which he became professor of anatomy in Victoria College, Toronto. Two years later he removed to St. Thomas, where he continued to practise his profession until his death. In 1871 Dr. Wilson first entered politics, when he became member of Parliament for East Elgin. He was a Liberal of advanced views and was reëlected in 1875 and again in 1882. Dr. Wilson was appointed to a seat in the provincial Senate by the Laurier government.

Dr. John Odlum, of Woodstock, Ontario, died June 27th, in the sixty-third year of his age. Dr. Odlum was a graduate of Queen's University and had practised in Woodstock for many years.

Dr. Edmond Gauvreau, of Quebec, died June 29th, in the sixty-fifth year of his age. Dr. Gauvreau was a well-known physician and was director of the Quebec Province Vaccine Institute.

Dr. Patterson died suddenly on June 23rd, at Iron River, Wis. For the last two years Dr. Patterson had been closely connected with the Thunder Bay Sanitarium at Port Arthur, Ontario.

News

THE meeting of the Canadian Public Health Association will be held in Toronto, September 16th, 17th, and 18th, when an interesting programme will be presented. At the same time the Annual Conference of Medical Officers will be held.

THE fourth annual meeting of the American Association of Clinical Research will be held in New York, at the Academy of Medicine, November 9th, 1912. The sessions will be from 9 a.m. to 1 p.m., from 3 p.m. to 6 p.m., and from 8 p.m. to 10 p.m. The evening session will be open to the public.

AT the eighty-first annual commencement of the Wesleyan University at Middletown, Conn., held on June 19th, the honorary degree of doctor of laws was conferred upon Dr. Amos J. Givens, proprietor of Givens Sanitarium for nervous diseases at Stamford, Conn.

H. R. H., THE DUKE OF CONNAUGHT, is to open the new hospital which is being erected at Kamloops, B.C. The opening is to take place on September 18th, 1912.

A HOSPITAL is to be erected at Haileybury, Ont., by the Sisters of Providence.

A ONE thousand dollar scholarship has been given to the Albert College, Belleville, by Dr. John Ferguson of China, and Dr. Frank Ferguson and Dr. William Ferguson of New York, in honour of their father.

THE establishment of a county hospital at Strathroy, Ont., is now under consideration. The citizens of Strathroy have offered to provide the site for the hospital, a motor ambulance, the sum of twelve thousand five hundred dollars, and to furnish the operating room, if the County Council will advance the sum of fifteen thousand dollars. A committee has been appointed by the County Council to consider the matter.

A NEW provincial hospital for the insane is in course of erection at Whitby, Ont.

THE report of the Montreal municipal assistance department for the year 1911 gives the following statistics: the number of applications received from destitute persons suffering from tuberculosis for admission to hospital was one hundred and seventy-five; one hundred and forty-four of these cases were committed, four refused, and twenty-seven settled by discontinuance of application or by the death of the patient. Thirty-four patients were discharged and eighty-four deaths occurred in hospital. On December 31st, 1911, there were twenty-two men and seventeen women patients in hospital. Of the patients who died during the year, sixty-seven per cent. were men, and thirty-three per cent. were women; the average age of the men was thirty-seven years and six months, that of the women thirty-two years and seven months. The amount paid for the maintenance of persons affected with tuberculosis was five thousand one hundred and seventy-one dollars and ninety cents.

ON June 6th, at Atlantic City, during the meeting of the American Medical Association, and following a symposium on anæsthesia, the National Society of Anæsthetists was organized. The chair was taken by Professor Yandel Henderson, of Yale, chairman of the commission on anæsthesia of the American Medical Association, and the following officers were elected for the year 1912-13: president, James Tayloe Gwathmey, of New York; vice-presidents, Charles K. Teter, of Cleveland, F. H. McMeechen, of Cincinnati, Yandel Henderson, of New Haven; secretary, William C. Woolsey, 88 Lafayette Ave., Brooklyn; treasurer, Harold A. Sanders, Brooklyn.

The constitution and by-laws are to be drawn up by the executive committee and submitted to the society at its next meeting for adoption; all names submitted for membership, if qualified in the estimation of the executive committee, shall be considered as charter members, if presented within a period of sixty days and accompanied by the levied due of three dollars.

A COMMISSION, presided over by Mr. R. W. Hannington, recently investigated twenty-eight complaints made against the Vancouver General Hospital. The result of the enquiry will be embodied in a report to the provincial secretary. Mr. Hannington stated that seventy-five per cent. of the complaints arose from the financial difficulties under which the hospital authorities had had to work, and that, after hearing the evidence, he was more than ever convinced of the worthiness of the institution in question.

During the month of May, eleven hundred and eighty-five school children were examined in Victoria, B.C., by Dr. Hunter. Fifty-four of these children were found to have defective vision, one hundred and eleven were suffering from defective teeth, and thirty-eight were found to breathe incorrectly.

A course of twenty-eight lectures in clinical medicine has been arranged by Professor A. Gilbert of the University of Paris. The lectures will be given at the Hôtel-Dieu, Paris, and will commence on Monday, September 23rd, 1912. Two lectures will be given each day, until the completion of the course on Tuesday, October 8th, 1912. A fee of one hundred francs is charged, which should be paid in advance to Dr. M. Deval, Chef de Laboratoire, Hôtel-Dieu, Paris.

Three cases of diphtheria and one case of scarlet fever have been reported from Berlin, Ontario.

The new wing which has been added to the hospital at Owen Sound was opened June 26th, 1912. The wing contains ten private wards, nine of which have been completely furnished by private subscription.

It is proposed to establish a hospital at Ashcroft, B.C. A free site for the hospital has been secured and a pledge given to provide the sum of fifteen thousand dollars.

A temporary hospital has been established at Salmon Arm, B.C. The building was opened June 18th, 1912.

The following physicians have been appointed as district health officers in the province of Ontario: Dr. D. B. Bentley, of Sarnia; Dr. T. J. McNally, Palmerston District; Dr. D. A. McClenahan, of Waterdown, Hamilton District; Dr. George Clinton, of Belleville, Peterborough District; Dr. Paul J. Maloney, of Cornwall, Kingston District; Dr. Egerton George, of Haileybury, Sudbury District; Dr. R. E. Wodehouse, of Fort William, Fort William District.

A HOSPITAL is to be established at North Battleford, Saskatchewan. The cost is estimated at about forty thousand dollars.

THE fourteenth annual meeting of the American Hospital Association will be held in the Hotel Ponchartrain, Detroit, from September 24th to September 27th, 1912. Dr. J. N. E. Brown, who is secretary of the association, will be glad to furnish any information that may be desired in reference to the approaching meetings. Dr. Brown's address is 90 Charles Street East, Toronto.

THE municipal hospital which is to be built at New Westminster will furnish accommodation for three hundred patients.

THE late Dr. Daniel Clark, of Toronto, has bequeathed sixty-five thousand dollars to be divided equally among the following institutions: The Sick Children's Hospital, the Home for Incurables, the Home for the Aged, the Home for Aged Women, the Old Folks' Home, the House of Industry, the Hospital for Consumptives, the Salvation Army, for its work in Toronto, and St. Andrew's Presbyterian Church.

A LOAN of three thousand five hundred dollars has been granted to the proposed hospital by the Strathroy city council.

DR. HAY has been appointed medical health officer for Galt, Ontario.

THE report of the Calgary General Hospital for May, shows that the work done by the hospital this year during the month of May, has exceeded by fifty per cent. that done during the same month in 1911. Three hundred and nine patients were admitted during the month, and eighteen deaths and twenty-one births occurred. Over three thousand dollars was expended on the treatment of charity patients.

THE West Coast General Hospital, which is to be established at Alberni, B.C., is to be a much larger building than was at first suggested, and the provincial government has increased the grant made to the hospital to ten thousand dollars. The estimated cost of the proposed hospital is seventeen thousand dollars, seven thousand of which will be subscribed by the residents of the district.

A CONSTRUCTION hospital has been established at Faulder Cottage on the Kettle Valley railway, British Columbia. The hospital is in charge of Dr. Campbell Davidson.

NINE cases of scarlet fever, and three cases of diphtheria, have been reported from Glace Bay.

THE following is the list of those who have recently graduated in medicine from the University of Toronto.

Harold Bell, Louis Judah Breslin, B.A., Hubert Arthur Wood Brown, B.A., William Henry Butt, David Lavern Dick, Hector Clayton Hall, B.A., Frank Russell Hassard, B.A., Miss Ethel Millicent Hayes, B.A., Frederick Hutchinson, B.A., Harold Heffering, Thomas Francis Kelly, Edgar John Leary, B.A., John Gagen Lee, B.A., Robert Roy McClenahan, B.A., James Stuart McCullough, B.A., William Bernard MacDermott, Marshall MacDonald, Frederick Maurice McPhedran, B.A., Charlton Archibald Macpherson, John Joseph Middleton, Miss Geraldine Oakley, B.A., George Arthur O'Leary, Herve John Robertson, B.A., Herman Frederick Sproule, Ernest Black Struthers, B.A., Don Alexander Warren, B.A., Frank Bertram Ware, Arnold Lorne Wellman, John Hill White, B.A.

THE following is the list of candidates who have passed the examination of the College of Physicians and Surgeons of Ontario:

Charles Cleland Alexander, Seaforth, Ont.; John Gordon Alexander, Dunnville, Ont.; Joseph Camil Eugene Arseneau, Robitaille, County De Bonaventure, Que.; Edwin Charles Axford, Talbotville, Ont.; Harold Richmond Barker, Thornbury, Ont.; Newton James Barton, Beeton, Ont.; William Russell Bateman, Thomasburg, Ont.; Frank Aubrey Benner, Bayham, Ont.; Harry Wordsworth Benson, Ross Mount, Ont.; Cecil Clinton Birchard, Coboconk, Ont.; William Oscar Bonser, Toronto; John Courtland Bradley, Fenaghvale, Ont.; Louis Judah Breslin, Toronto; Hubert Arthur Wood Brown, Toronto; Frederick Thomas Bryans, Jamestown, Ont.; Frederick Sypher Burke, Fergus, Ont.; William Henry Butt, London, Ont.; William Charles Campbell, Belleville; William Richard Cann, Oshawa, Ont.; George Wylie Dundas Carleton, Thornhill, Ont.; William Ernest Caven, Erindale, Ont.; Neil Alexander Christie, Stayner, Ont.; Llewellyn Herbert Coates, Brantford, Ont.; Morley Garnet Cody, Newmarket, Ont.; William Macpherson Cody, Hamilton; Robert Colvill, Port Perry, Ont.;

Stella Alice Cunningham, Toronto; Robert Davies Defries, Toronto; Leonard Lansdowne Derby, Plantagenet, Ont.; Reginald Winniett Digby, Brantford, Ont.; Roy Gladstone Douglas, Meaford, Ont.; Thomas Alexander Jamieson Duff, Cookstown, Ont.; Allan Sloan Eagles, Meaford, Ont.; Donald Thomas Evans, Port Perry, Ont.; Edgar George Evans, Virginia, Ont.; David Joseph Norman Ferrier, Belwood, Ont.; Carlos LeRoy Russell Fuller, Ruthven, Ont.; John Alexander Gardiner, Walton, Ont.; Howard Hilman Gordon, Manotick, Ont.; Charles Robert Graham, Arnprior, Ont.; William Osborne Gliddon, Ottawa; John Edwin Hagmeier, Hespeler, Ont.; Louis Gordon Hagmeier, Hespler, Ont.; Hector Clayton Hall, Fort Qu'Appelle, Sask.; William Vernon Harcourt, Arthur, Ont.; Alfred Purvis Hart, Wilfrid, Ont.; Horace Hanly Harvie, Coldwater, Ont.; Ethel Millicent Hayes, Toronto; Clarence Wellesley Henders, Port Perry, Ont.; Clarence Almanzer Howard, Athens, Ont.; Fred. Hutchinson, Sarnia, Ont.; Lloyd Arnold Jones, Glanford, Ont.; William Andrew Kennedy, Kingston; Malcolm Daniel Boyd Kinsella, North Bay; William James Leach, North Gower, Ont.; Edgar John Leary, Britannia, Ont.; Joseph Horace Legault, Ottawa; Malcolm Thomas MacEachern, Fenelon Falls, Ont.; Lloyd Phillyss MacHaffie, Cornwall; Ewen Archibald Mackenzie, Toronto; Alfred Charles Martin, Hamilton; Elmer Walker Mitchell, Sandhill, Ont.; Charles Joseph McCabe, Hamilton; John Sangster McCallum, Smith's Falls, Ont.; Jas. Stuart McCullough, Walter's Falls, Ont.; James Phipps McDermott, Eganville, Ont.; Ernest Augustus McDonald, Milwaukee, Wis.; Marshall McDonald, Cowley, Alberta; Edwin Henry McGavin, Seaforth, Ont.; Frank E. Beachem McGilvery, Simcoe, Ont.; Donald George Sinclair McKay, Bradford, Ont.; Robert Roy McClenahan, Waterdown, Ont.; Archibald Harry McMurchy, North Bay; Frederick Maurice McPhedran, Toronto; George Alexander McQuibban, Harriston, Ont.; James William McQuibban, Harriston, Ont.; Geraldine Oakley, Craigvale, Ont.; George Arthur O'Leary, Toronto; Leo Harold O'Meara, Fallowfield, Ont.; Garfield Arthur Platt, Kingston; Stuart MacDowall Polson, Kingston; Albert Gower Poole, Trenton, Ont.; George Arthur Publow, Kingston; James Frederick Rigg, Niagara Falls; Isabella May Roberts, Toronto; Herve John Robertson, Kelvin, Ont.; Austin Roszell, Smithville, Ont.; Charles Scott Russell, Kingston; Harold Lee Rowntree, Weston, Ont.; Nathan Shacknove, Hamilton; Charles Wilfred Sinclair, Aylmer, Ont.; Wilfred Davy Smith, Currie's Crossing, Ont.; Herman Frederick Sproule, Toronto; Robert Stanley Stevens, Delta, Ont.; Elizabeth Lilian Stewart, Aurora, Ont.; Robert Roy Stirrett, Petrolea, Ont.; Ernest Black Struthers, Galt, Ont.; Paul Joseph Sweeney, Arthur, Ont.; Frank Leslie Thompson, Uxbridge, Ont.; Howard Elsworth Thompson, Whitby, Ont.; William Robert Tutt, Parry Sound; Merritt Carlton Vaughan, Forks Road, Ont.; Ambert Hastie Veitch, Port Elgin, Ont.; James George White, Mount Clemens, Mich.; Warren Edward Wilkins, Verona, Ont.; John Bowers Widdis, Hagersville, Ont.; Cleveland Roy Wilson, West Toronto; John Parr Wilson, Palgrave, Ont.; Ernest William Zumsteen, Winslow, Ont.

The Thirteenth Field Ambulance of Toronto was awarded the Shillington cup for highest efficiency at the Army Medical Corps camp at Carling's Heights, London, Ontario.

A case of small-pox is reported from Halifax. Preparations are now being made for the construction of the new hospital, and the patient has been placed in a tent where he will be cared for. It is proposed to burn down the old building.

The residence of the late James Manson, of Strathroy, Ontario, has been offered by Mr. Dunn to be used as a hospital. It has been decided to accept the offer and the necessary measures to form a hospital trust board are to be taken by the town council.

A meeting of the Portage La Prairie hospital board was held June 12th. The total expenditure for the month was nine hundred and seventy dollars and the receipts amounted to one thousand and sixty-eight dollars. Seventy patients received treatment during the month, four deaths occurred, and seven operations were performed.

A new psychiatric hospital is to be established at Toronto. The site will be provided by the city and one hundred thousand dollars will be expended on the building; the hospital will then be maintained by the Ontario government and will be used for the temporary detention of insane persons, who, under the present arrangement, are confined in the jail. The treatment of nervous diseases, of course, will constitute the principal work of the institution.

A filtration plant has now been installed at Saskatoon, and all the wells in the city are to be closed. By this means, it is hoped that the number of cases of typoid fever, which usually occur in Saskatoon at this time of the year, may be very greatly reduced.

The Misericordia Hospital at Edmonton is to be enlarged. The hospital is under the direction of the Sisters of Misericorde. During the past three years over three thousand patients have received treatment and more accommodation is required. The suggested alterations include the erection of a main building and a wing; and the present building will then form a second wing. The estimated cost of these additions to the hospital is about one hundred thousand dollars and towards this amount the city has been requested to grant fifty thousand dollars. The matter is to be discussed by the council.

The seventh edition of Dr. S. Adolphus Knopf's International Prize Essay, "Tuberculosis as a Disease of the Masses and How to Combat it," has just been translated into French by Dr. Eugene Grenier of the Bruchesi Tuberculosis Institute of Montreal. The proceeds of the sale of this book will be for the benefit of the institute. The first translation of a former edition into French appeared some years ago in Paris. Dr. Grenier's new French-Canadian translation represents the twenty-eighth foreign edition which, with the seven American ones, makes thirty-five editions in twenty-four different languages which have appeared within the last ten years. They are the American (seven), Arabic, Bohemian, Brazilian, Bulgarian, Canadian, Chinese (two), Dutch, English, Finnish, French, German, Hebrew, Hindu, Hungarian, Icelandic, Italian (two), Japanese, Mexican, Norwegian, Polish, Russian (two), Serbian, Spanish, Swedish, and Turkish. Since the book was written mainly for the education of the laity, this unusually large circulation speaks well for the world-wide interest in tuberculosis, in whose interest the Berlin International Tuberculosis Congress offered and awarded the prize. Dr. Grenier's translation is on sale at the Librairie Beauchemin, Limitée, 79, rue Saint Jacques, Montreal. The price is the same as the American edition, twenty-five cents per copy.

The following is a list of those who have graduated with the degree of M.B., from Queen's University:

G. W. Burton, Great Shemogue, N.B.; H. B. Connelly, Ottawa; R. N. Cozier, Georgetown, B.G.; V. H. Craig, B.A., Kingston;

A. G. Deuel, Rock Springs, Wyo.; A. J. Flood, Delta; W. L. Gadboury, Plantagent, Ont.; O. M. Goodwin, Amherst, N.S.; A. A. Halliday, Chesley, Ont.; W. G. Hamilton, Elgin; J. J. Hurley, Calgary; A. H. Harty, Alley, Jamaica; H. M. Harrison, Kingston; D. C. Irwin, Ottawa; G. A. L. Irwin, Wine Harbour, N.S.; G. R. Miller, Owen Sound; J. H. Moore, Victoria; E. L. McCardel, Dundas; McCausland, St. Thomas; C. E. McLean, Athens, Ont.; E. M. A. Oldham, Chatsworth, Ont.; L. J. Phillips, Chetek, Wis.; C. K. Robinson, Kingston; R. R. Scott, Perth; O. H. Singleton, Lyndhurst, Ont.; L. W. Walkey, Hanover; C. F. Williams, Cardinal, Ont.

Those who have been accorded the degrees of M.D. and C.M. are:

J. Brown, Davidson, Sask.; A. B. Cook, Kingston; W. H. Gardiner, B.A., Burlington, Ont.; A. S. Gibson, B.A., Kingston; C. R. Graham, B.A., Kingston; A. A. Gray, Eagle, Ont.; H. Grey, St. Albans, Eng.; C. A. Howard, Athens, Ont.; E. D. Hubbell, B.A., Thamesville, Ont.; W. A. Kennedy, B.A., Kingston; M. D. B. Kinsella, North Bay; W. F. Lockett, Kingston; E. V. W. Mellad, Jamaica; T. W. F. MacKnight, B.A., Ingle, Ont.; E. L. Pennock, Brockville; G. A. Platt, M.A., Portsmouth, Ont.; G. A. Russell, B.A., New Liskeard, Ont.; G. A. Simmond, B.Sc., Simmons, Que.; G. H. Smith, Kingston; R. S. Stevens, B.A., Delta, Ont.; A. M. Warner, B.A., De Cewsville, Ont.; J. B. Widdis, Hagersville, Ont.; H. M. Young, Renfrew, Ont. A diploma of public health has been awarded to Chas. A. Hodgetts, M.D., Ottawa. The medal in medicine was gained by G. W. Burton, and that in surgery by C. S. Russell, B.A.

By the will of the late Mr. H. Markland Molson, who perished in the wreck of the *Titanic*, ten thousand dollars is bequeathed to the Montreal General hospital.

Four cases of small-pox are undergoing treatment in the new Montreal Civic Hospital, which was opened on June 14th, 1912. None of these patients had been vaccinated.

The erection of a public hospital at Wynyard, Saskatchewan, is under consideration. Wynyard is suggested as the most suitable place for a hospital between Yorkton and Saskatoon.

More hospital accommodation is needed at Stettler, Alberta, It is proposed to utilize the old school building as a hospital, and an effort is being made to collect sufficient funds to make the required alterations.

THE new hospital at Gladstone, Manitoba, was opened on June 3rd, 1912.

THREE cases of small-pox were recently discovered in a boarding house in Saskatoon.

THE local chapter of the Daughters of the Empire has purchased a building at Orangeville, Ontario, which is to be used as a hospital. The Dufferin county councillors have made a grant of three hundred dollars to the proposed hospital.

THE regular monthly meeting of the board of directors of the Kingston Tuberculosis Hospital took place June 12th. The by-laws were amended to provide for five representatives of the Daughters of the Empire on the board. The subscriptions during the month amounted to seven hundred and ninety dollars. It is expected that the new buildings, which are in course of erection, will be completed some time in August. A portable house of canvas and wood, consisting of three rooms, has been purchased, in which a few patients in the early stages of tuberculosis will be placed.

A CASE of small-pox, which originated in Ripley, Ontario, is being treated at the Toronto Swiss Cottage Hospital.

DR. A. A. WEAGANT, of Ottawa, Dr. T. E. Kaiser, of Oshawa, and Dr. H. R. Casgrain, of Windsor, Ontario, have been appointed to the provincial board of health.

IT is proposed to build a cottage at Weston, Ontario, which may be used as an isolation hospital.

AN isolation wing is to be added to the hospital at Welland, Ontario. The new wing is to be devoted to the treatment of cases of tuberculosis.

THE new hospital at Edmonton, which is to be erected on the university grounds, is to be a four-storied building of brick and stone. A sun porch is to be provided for each storey, to extend along the full width of the building on the north side, and the roof is to be arranged as a roof garden.

Over twenty-one tons of foodstuffs, consisting principally of flour, bread, fruit, vegetables, and meat, were condemned as unfit for use and destroyed by the medical health officer of Saskatoon during the month of May. This amount is very much greater than the quantity which is usually destroyed each month—the average amount being from three to five tons.

The new hospital, which is to be erected at Peterborough, will be situated to the south of Nicholl's hospital. It is to be a brick building of three stories and will provide accommodation for forty-five beds.

Dr. Charles G. Sutherland, of South Porcupine, has been appointed medical superintendent of the Moose Jaw City Hospital.

Several cases of typhoid fever occurred in Welland, Ontario, during the first two weeks in June.

It is expected that the Hôtel Dieu at Chatham, N.B., will be completed by the beginning of August. If it is found necessary to do so, it is proposed, later, to add a wing at each end of the present building.

An outbreak of scarlet fever is reported from Trepassey, Newfoundland.

Thirteen cases of scarlet fever and two cases of diphtheria were reported to the Halifax Board of Health at a meeting held on June 13th.

The new hospital at Dartmouth, N.S., is to be commenced very shortly. The estimated cost of the building is eighty thousand dollars.

The Committee of the Victorian Order of Nurses of Halifax are to confer with Dr. MacAulay and Dr. Morton, of the Board of Health, as to the possible means to be taken to lessen the infant mortality of that city. It is stated that, in 1911, the birth rate was one thousand three hundred and five and the number of infants who died under one year of age was two hundred and forty-three, or more than eighteen per cent.

Several cases of diphtheria have been reported from Toronto. In one instance, a mother and three children died of the disease.

Two cases of typhoid fever have occurred near Bonavista, Newfoundland.

During the month of May, sixty-one patients were treated in the North Bay Victorian Hospital. Forty-three of these were discharged during the month; three births and one death occurred.

Provided certain regulations are complied with, a patient in the St. John, N.B., hospital can now choose his own physician. Hitherto, no practitioner, who was not on the hospital staff, has been permitted to attend patients while in the hospital. At a meeting of the hospital commission, which took place June 13th, it was decided that outside practitioners should be allowed to treat their own patients in the hospital.

An Act has been passed by the legislature of New Brunswick to prohibit expectoration on the side-walks of cities, towns, or incorporated villages, or on the floor of any public conveyance. The provision is part of the new Public Health Act, which also requires that any slaughter house shall be situated at a distanced of at least three hundred yards from any road or dwelling place. More stringent regulations respecting the notification of cases of infectious disease, particularly small-pox, and the conduct of lobster factories, are to be enforced.

The annual meeting of the Moncton hospital board took place June 12th, under the presidency of Mr. F. W. Sumner. The report of the superintendent showed that, during the year ending May 31st, 1912, five hundred and eighty-one patients had been admitted to the hospital, four hundred and eighty-nine patients had been discharged, and thirty-three deaths had occurred.

The Board of Health of St. John, N.B., has decided to take legal proceedings against householders who have refused to comply with the requirements of the board concerning the sanitation of their houses. The question of the milk supply has also been considered, and inspectors have been authorized to cancel the licenses to sell milk in the city of those farmers whose premises are not in a satisfactory condition.

Small-pox is still reported from Joliette, Que.

By the will of the late Dr. Anderson, of London, Ont., who died nearly forty years ago, four thousand dollars was bequeathed to the Victoria Hospital. The money was to be given to the hospital on the death of the widow of Dr. Anderson, who was to receive the interest on the money during her life-time. Mrs. Anderson died early in June; consequently, the money will now go to the hospital.

Canadian Literature

Original Contributions

Canadian Practitioner and Review, June, 1912:

Some aspects of neurology to general practice	W. A. Turner.
The importance of the so-called Pretubercular Stage.	R. C. Paterson.

Public Health Journal, June, 1912:

Diet in Nervous Disorders	T. A. Williams.
Some social aspects of Tuberculosis	Mrs. Adam Shortt.
Physical and Economical Factors in the Biological Disposal of Sewage	P. H. Bryce.
Dust as a factor in Disease	W. F. Shaw.
Tuberculosis and Public Health	Sir James Grant.
Prevention of Scarlet Fever	Arthur Wilson.

Dominion Medical Monthly, July, 1912:

Presidential Address	Herbert A. Bruce.

Canadian Journal of Medicine and Surgery, July, 1912:

Presidential Address	Herbert A. Bruce.

Le Bulletin Médical de Quebec, May, 1912:

L'inégalité pupillaire dans les affections pleuro-pulmonaires	Emile Sergent.
La tuberculose des séreuses	Professeur Hutinel.
Dyspepsie et tuberculose	G. Leven.

Journal de Médecine et de Chirurgie, May, 1912:

Chancre mou	H. Gougerot.

L'Union Médicale du Canada, June, 1912:

Quelques observations de Chorée	J. E. Dubé.
Hygiene de la Bouche et son influence sur l'état général de la sante	A. K. Malouf.

Medical Societies

HALIFAX MEDICAL ASSOCIATION

A NEW medical association was formed in Halifax on June 5th. The association, which is a local one, will be known as the Halifax Medical Association. The following officers were elected: president, Dr. Kirkpatrick; vice-president, Dr. Rankine; secretary, Dr. MacIntosh; treasurer, Dr. Morton. Executive council: Drs. A. McD. Morton, Foss, Eagar, MacKenzie, and Currie.

VALLEY MEDICAL SOCIETY

THE annual meeting of the Valley Medical Society was held at Digby, N.S., on June 3rd. The following officers were elected for the ensuing year: president, Dr. W. F. Read, Digby; vice-presidents, one for each county, George deWitt, Kings; Dr. L. R. Morse, Annapolis; Dr. L. J. Lovett, Digby, secretary-treasurer, Dr. Peters, Annapolis. Interesting papers were read by Dr. Farrish, of Yarmouth, and Dr. Read, of Digby. A public meeting was held in the evening and interesting discussions on sanitation and public health were enjoyed by the members.

THE MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE sixteenth regular meeting of the Society was held Friday evening, May 17th, 1912, Dr. J. M. Elder, president, in the chair.

LIVING CASE: Separation of the lower epiphysis of the femur, by Dr. J. M. Elder. The boy, aged ten years, jumped five or six feet into what was apparently soft snow, but which proved to be solid underneath. He fell over and was unable to stand or move the knee. He was left in that condition for a week and then brought to hospital. He had apparently an anterior dislocation of the knee, with marked synovitis. A skiagram taken at the time of admission showed that he had a separation of the lower epiphysis of the femur, and the whole epiphysis, with the joint and the tibia and fibula, was displaced forward and pulled up. I tried twice, at different intervals, to reduce this, first by traction under anæsthesia and again by putting it up in a markedly flexed position—the Jones position—but absolutely failed. He came into hospital on January 23rd and on February 12th, after the two previous failures to reduce the condition. I made an incision in the outer side of the knee joint, coming down upon the displaced epiphysis lying in front of the femur, and tried in every way to displace downwards the epiphysis and put it in place. It would not move at all. I was afraid at the time to destroy the epiphyseal line and prevent the future growth of the bone. I then passed round the shaft of the bone a Gibli saw, and severed the shaft well above the break, and then lifted the lower piece of the epiphysis out of the periosteum and put it in warm salt solution. I then manipulated the joint back into place and got the epiphysis down against the tibia. I next found that I could not manage to replace the portion I had sawed off and placed in the salt solution, owing to the great contraction of the muscles. I therefore sawed a little bit off the upper end and was then able to put it back into place. I closed the periosteum and the soft parts without drainage and put the leg up in a McIntyre splint. I got primary union of the soft parts, and as soon as I thought the bony union warranted it, I began passive motion of the joint, and the boy, as you see, has now a fairly good joint with some stiffness yet, but he walks very well and is still under treatment. The strange thing is that I have measured the limb and cannot now get a bit of difference in the two legs in length, although I distinctly sawed off the bone at least one half inch. The skiagrams which I present show the condition at various intervals up to the present.

I was very interested in this case because it is the first wherein I had a chance of proving the truth or falsity of Murphy's statement, viz.: that all the bone thus implanted is absorbed and replaced by new bone tissue. The skiagrams would seem to prove the truth of the statement, and I think it is evident that the bone is being replaced by new bone tissue. I was sorry at the time of operation that I had not at hand one of Murphy's magnesium plates, which I could have used as an interosseous splint. The knee joint was not hurt except for the synovitis. This is the third case of this peculiar accident that I have treated. If such a case is seen early, reduction is easy and the result is good. But two out of the three cases I have met with were treated as synovitis of the knee with the result I have just shown you.

Discussion: Dr. E. W. Archibald: May I ask Dr. Elder what muscles particularly seemed to oppose an obstacle in the way of reduction. The gastrocnemii seemed to be particularly active in the pictures. I must congratulate Dr. Elder upon the ingenious way in which he managed to get the epiphysis back into place in the presence of such a degree of soft tissue contraction. Personally the only possible discussion I might have to offer would be along this line, that having already a shortening, which was considerable and of a week's duration, one might possibly have tried beforehand to put on extension for some days in the expectation of getting the lower fragment pulled down. I have used at times Buck's extension with a large weight, thirty pounds or more, by which means I have straightened out a shortening of 1½ inches after the lapse of a week; or possibly the method of nail extension might be used. I merely throw out this suggestion; I know that the contraction of muscles even within a week is sometimes enormous.

Dr. J. M. Elder: In reply to Dr. Nutter, I would say that as far as this case was concerned it was not a question of shortening of the muscles. The problem here was to get the restoration of the epiphyseal line, not simply to reduce a fracture; and further, when I got it there, whether it would be so damaged as to interfere with the future growth of the bone. The only way was to separate the shaft higher up, lift out the diaphysis and replace it. I tried extension twice under ether, I tried to move the epiphysis back into place and I failed, even when I cut down upon it. I was therefore forced to go up higher and take the piece out.

Pathological Specimens: Dr. A. H. MacCordick.

The first series of specimens shows the more common affections of the kidney, as follows:

1. Marked hydronephrosis following complete obstruction of the ureter.

2. Chronic interstitial nephritis.

3. Tuberculous nephritis.

4. Multiple abscesses from which pure cultures of bacillus coli were obtained.

5. Renal calculus.

6. Acute parenchymatous nephritis following bichloride poisoning.

7. Acute hæmorrhagic nephritis with infarct from a case of meningococcus septicæmia.

8. Traumatic rupture of left kidney. A young man working on construction work fell backward a distance of four feet, striking his left side against a steel beam. He walked into the hospital and as he was pale and complained of pain in his side he was kept under observation. The urine contained blood. The left abdomen became resistant and pain radiated down the left thigh. The left kidney was explored, found torn completely across, and was removed.

This recalls a case the specimen from which was shown before this society a few months ago. A man of middle age fell two feet striking his right side against a plank. A condition of injured kidney was diagnosed, but he refused operation. Eleven months later he died and autopsy revealed an immense abscess in which lay the kidney completely torn across. The abscess had burrowed into the ascending colon and also the duodenum.

Probably the reason why the blood clot in these cases is not absorbed is that clotting and organization is prevented by the secretion of urine into the hæmatoma.

9. Local necrosis of liver. The condition is found in acute fevers, such as typhoid, also in diphtheria, but most marked in pneumonia. Accompanying section shows a fatty degeneration of liver cells. The necrosed areas appear to bear no definite relation to the different parts of the liver lobule. In this case pure cultures of pneumococci were obtained from the liver.

Discussion: Dr. J. M. Elder: In connexion with the third specimen, that of ruptured kidney, I may say that over a year ago I had a young man brought into my clinic at the Montreal General Hospital, who had been knocked off the back of a street car, with the result that he had a ruptured kidney. I operated and removed what I thought was the whole kidney, but on looking at the specimen afterwards I found that one portion was missing and thought it had escaped in the blood clot. The wound did not heal; he had a urinary fistula in the loin which persisted, and at a subsequent operation I found a small portion of the lower pole of the kidney still left, nourished by a small blood vessel, with the result that there was secretion of urine going on and the urine discharged out through the fistula in the back. Upon removing this functionary piece of kidney substance, the wound promptly healed and the patient is now well.

PAPER: Chronic unopened empyema, by Dr. E. M. von Eberts. Synopsis: Obliteration of cavities in these cases by means of negative tension. Accurate regulation of tensions employed. Measurement of air withdrawn as index of rate of obliteration of cavities. Radiographic records showing rate of re-expansion of lung. Reports of two cases.

DISCUSSION: Dr. D. P. Anderson: I would like to say a few words with regard to this excellent paper which has been of much interest to me, and I am very pleased to attest to the practical value of the work that Dr. von Eberts has been doing. Some time ago the doctor operated on a case of mine; the patient, who was an advanced alcoholic, had a very severe attack of pneumonia, which was later followed by pyopneumothorax. That man made a perfect recovery with absolute obliteration of the cavity in the pleura, and at the same time the lung seems to be in a very healthy condition. I was struck with the great advantage of this operation over many of the more simple, possibly, and more easily performed operations. A simple drain between the ribs might possibly have reached only one division of a cavity, as it is possible these cavities may be divided or walled off and you get a more or less multilocular condition. The advantages of a large opening make matters more simple and enable you to break down these adhesions and so get complete drainage.

Dr. F. J. Shepherd: I should like to express my admiration of the way in which Dr. von Eberts has demonstrated this new method of treatment of empyema this evening. It is a great improvement on the old methods, where, as a result, you had a permanent retraction of lung and retraction of one side of the thorax in even the most favourable cases. Also, to close the cavity mutilating operations were undertaken; now this method, as so well demonstrated by the remarkable series of skiagraphs, is a distinct advantage, and Dr. von Eberts is entitled to every credit for his most excellent results.

Dr. A. H. Pirie: I would like to thank Dr. von Eberts for his interesting paper. I have admired the skiagrams very much. As to skiagraphic pictures of the chest, we have not got (so far as I am aware) the apparatus in Montreal for taking really good stereoscopic pictures of the chest; it takes a special apparatus for quickly changing one plate after the other and catching the chest in a stationary position and the heart also in the same position. That is something which we shall have to get here in Montreal to be up-to-date. About the drainage tube going through the chest, is there no chance of air leaking through by the side of the tube and upsetting one's calculations? I would like to hear in future something from Dr. von Eberts about the results obtained from positive pressure by injecting nitrogen in cases of pulmonary tuberculosis. I believe this is a useful method not yet fully taken advantage of.

Dr. E. W. Archibald: It is perhaps hardly necessary for me to add my congratulations. We are sure that the whole society has appreciated Dr. von Eberts paper at its full value. What strikes me in it is the application of physiological facts to clinical work. It seems to me that surgeons who desire to make advances at the present day must do so along the lines of the fundamentals in physiology and pathology rather than along the lines of newer methods of operating. And certainly the paper which we have just listened to is to my mind an example of good and faithful work along these lines. What struck me particularly was the fact that Dr. von Eberts by means of these newer methods, or rather methods based on a reappreciation of physiological facts, has been able to treat chronic empyema without the wide opening which we have always considered necessary and which usually, to the sad experience of many of us, leads to a chronic, large cavity. Although I am perhaps hardly prepared to accept his dictum that the thickened wall of chronic empyema and consequent failure of lung expansion is due rather to chronic infection from the open thorax following operation than to the disease itself originally; that is, if he wants to make that dictum universal. Still, I have no doubt that such chronic, post-operative, mixed infection does contribute very materially to such a result perhaps and is sometimes the sole cause. If Dr. von Eberts can, by repeated aspirations and thoroughly worked out negative tension, which is kept carefully negative, cure such cases, even though it costs more time, it certainly is a decided advance; and I would look upon that part of his paper as the really valuable and really new thing that has been added to our knowledge of empyema.

Dr. E. M. von Eberts: Dr. Pirie mentions the question of leakage. I have found that with proper care in the application of the dressing leakage does not occur, as a rule, after the first dressing.

When the discharge is very profuse, a certain amount of capillary leakage may take place about the dressing, but if the manometer be applied, one finds that there is a negative tension within the cavity. Apart from the fact that the dressing is especially designed to prevent leakage at any point, the negative tension within the cavity exerts the same force in holding the dressing against the chest wall as it does in drawing the lung outward.

The second paper of the evening was read by Dr. J. Graham Willmore, of the Egyptian Quarantine Service, on "Sanitary measures in relation to the Mohammedan Pilgrims."

THE seventeenth regular meeting of the Society was held Friday evening, June 7th, 1912, Dr. J. M. Elder, president, in the chair.

LIVING CASES: A series demonstrating the treatment of certain deformities resulting from paralysis, by Dr. A. MacKenzie Forbes. Dr. Forbes exhibited five patients from the Children's Memorial Hospital, showing the different stages of progress of treatment of deformities resulting from anterior poliomyelitis.

PATHOLOGICAL SPECIMENS: Exhibited by Dr. E. J. Mullally.

1. Large carcinomatous ulcer of the large bowel. Symptoms date back six months, pains in the abdomen half an hour after meals, feeling of fulness, constipation; no particular change in bowel contents, neither passage of blood. Tenderness three weeks prior to operation. Patient was a male fifty years of age.

2. Kidney removed from a female aged twenty-five. Patient gave symptoms of an acute attack of renal colic about a year prior to entrance to hospital, second attack seven weeks before admission, pain radiating to lumbar region. When she entered hospital it was found that she had a large perinephritic abscess, which was demonstrated at operation and two or three other abscesses were found in the region of the upper portion of the ureter. The kidney was removed and two large phosphatic calculi can be seen in the kidney.

3. Kidneys, bladder, and ureters removed at autopsy from a man aged sixty-seven, with a history of prostatic trouble two years prior to death. He entered the hospital forty-eight hours before death with acute uræmic poisoning. Enlarged prostate, hæmorrhagic cystitis, dilated ureters, atrophy of the right kidney and compensatory hypertrophy of the left, with pericystitis and perinephritis, were found, also numerous small abscesses in the substance of the left kidney.

4. Incomplete intestinal obstruction from a large cæcal intussusception. Patient, an elderly woman, aged sixty-two, was seized with sharp pain in the right lower quadrant of the abdomen three weeks prior to entrance to hospital; did not take to bed, but was not able to do active work. Appendical abscess was diagnosed and she passed flatus and the bowels moved daily. At the operation this intussusception was found. The cæcum and ascending colon were removed. The appendix was 10 cm. in length and was drawn into the intussusception.

Case Reports: 1. Aspergillus in the auditory canal, by Dr. G. H. Mathewson. Dr. L. J. Rhea was good enough to grow the fungus for me, and from this growth, which I shall pass around, you can get a fair idea of the appearance of the fungus in the ear. This condition practically always occurs in ears that are the seat of chronic eczema, where the meatus is wet. The symptoms are simply those of eczema, and objectively, when you look into the ear, if it is an ordinary aspergillus like this one, the fungus looks like a mass of cotton wool; it is white in the ear, but when you get it out it has quite a greenish or yellowish tinge. The whitish aspergillus is somewhat more rare than the black, the aspergillus niger. With regard to treatment all you need do is to clean out the ear and treat it for some time with alcohol, as long as six weeks, when it is cured. In Montreal, so far as I know, Dr. Buller saw two of of these cases at least, one of which was a white one; Dr. Birkett had one black and one white one, and I myself have seen one black and one white one. You can see the mycelium and the spore cases under the microscope.

2. Primary sarcoma of the clitoris (with micro-photographs), by Dr. F. A. L. Lockhart. The patient was sent to the Montreal General Hospital by Dr. J. T. Finnie, in December, 1911. She was a nullipara, aged sixty-two years, and complained of a growth in the private parts, some irritation of the vulva and pain. She had suffered from rather severe hæmorrhages from the tumour, the latter being first noticed in October, 1911. Her family history was good and there was no history of injury. On examination, nothing abnormal was made out in the chest or abdomen, but there was a yellowish tinge to the conjuctiva. A mass 8×4 cm. was seen to be attached to the clitoris and to extend down the left labium minus, nearly to its lower extremity, and to a slighter extent to the right labium minus. The surface was rough and cauliflower-like, with dark patches scattered over it, and bled on slightest irritation. The inguinal glands were affected, two on the right and one on the

left side. There was no loss of flesh and no cachexia. The whole clitoris and both labia minora were excised, the incisions going well free of the disease. As there was some traction on the urethra a retention catheter was left in situ for two days. The wound healed by first intention. This was on December 13th, and there has been no return up to the present. The inguinal glands were cleared out at the time of operation. Dr. L. J. Rhea, of the pathological department of the hospital, reported the case to be one of melanotic sarcoma clotoridis.

PAPER: The paper of the evening was read by Dr. F. S. Patch on the diagnosis of gonorrhœal infections by the method of complement fixation.

DISCUSSION: Dr. J. A. Nutter: I would like to ask Dr. Patch if he has more frequently obtained positive results in gonorrhœal arthritis than in other parts of the body. It seems to me it would be a very material aid in the diagnosis of joint conditions if we could depend upon this.

DR. M. LAUTERMANN: I had the advantage of being present at the last meeting of the American Urological Association, where the subject of this paper occupied a very prominent place in the discussions. I am very glad to have an opportunity of expressing my appreciation of the manner in which Dr. Patch has brought this matter before us. Unfortunately, it seems to be a rule that when one undertakes to do work along certain lines we are influenced by our views rather than by our findings. Dr. Patch has put the case very fairly and in an unbiased manner. At the last meeting of the American Urological Association we had a whole afternoon's discussion on this subject with such well known workers as Louis Schmidt, Gardner and Bain, and Dr. Schwartz, who initiated this work at Cornell in New York City. There is one gentleman in Los Angeles who has procured a culture medium entirely his own, and different to anything that has so far been used for the cultivation of gonococci, that bids fair to supply us with a normal preparation and, in that way, remove the difficulty incidental to the different strains of gonococci that one meets with in doing this work. I have attempted in a small way to carry out some of this work myself and, in a general way, the position that Dr. Patch has outlined to you represents everything that my experience has offered. I think with Dr. Patch that while this reaction is hardly as reliable as the Wassermann is in connexion with syphilis, there seems very little room for doubt that with a little more work in the hands of the very excellent men who are studying the subject to-day, in a very short time we will have a thoroughly reliable means of diagnosing residual gonorrhœa in almost any tissue of the body.

The most important statement made to-night by Dr. Patch was the fact that forty-four per cent. of the cases of clinically cured gonorrhœa gave a positive reaction. As one who has treated a great many cases of this disease during the last sixteen or seventeen years, I have often stated that these cases were not regarded seriously enough. Of course, we are as yet necessarily at the mercy of the serologists to settle the question of when they are or are not cured. The importance of this subject is now being properly estimated as to marriage; it is a duty we owe our patients, and, unfortunately, a duty that is not always as thoroughly carried out as it should be, namely, to insist that every man who has either had a gonorrhœa or been exposed to the possibility of contracting gonorrhœa, should be thoroughly examined before entering upon the married state. And that we have the means of determining the fact beyond doubt is something to be thankful for.

Dr. F. S. Patch: We have presented the above paper with a certain amount of reserve. While we think the method has undoubtedly a future, at present the possibilities of error in the technique are so great that we hesitate to express unqualified opinions. As to vaccine treatment in gonorrhœal arthritis, vaccines are undoubtedly of advantage.

ONTARIO COLLEGE OF PHYSICIANS AND SURGEONS

The Ontario College of Physicians and Surgeons held its annual meeting at Toronto from July 2nd to July 6th. On this occasion the following officers were elected: president, Dr. Edward Ryan, of Kingston; vice-president, Dr. Otto Klotz, of Ottawa; registrar, Dr. J. L. Bray; treasurer, Dr. H. W. Aikins. The report of the board of examiners was a satisfactory one and showed that of the one hundred and fifty graduates who entered for the spring examinations, one hundred and twelve succeeded in passing the examinations, and that in the autumn fifty-one entered for the examinations, out of which forty-seven were successful.

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ADDRESS IN SURGERY

By Arthur E. Giles, M.D., B.Sc., F.R.C.S.

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THE first words of this address must give expression to the first thought that arose within me when I received from my old friend and house-surgeon, Dr. E. W. Allin, the message requesting me to deliver the Address in Surgery before this meeting of the Canadian Medical Association. This first thought was that it was the greatest compliment that had been paid to me, and subsequent reflection has only increased my appreciation of the honour.

Like an after-dinner speaker, I might attempt to disarm your criticism and make a preliminary bid for your indulgence by depreciating my worthiness and disparaging my oratorical abilities; but I think that it will be better policy, and I know that it will be better manners, to assume that you will be

"To my faults a little blind
And to my virtues very kind,"

and to embark, without further preliminary, upon the subject of my address. You will not expect excursions into the domain of general surgery from one who for twenty years has worked in the more restricted field of one of its special departments; but the general surgeon and the gynæcologist meet on the common ground of abdominal surgery; and as this theme fulfils the double condition of falling legitimately under the description of "an address in surgery," and also allowing me to speak on a subject with which I may claim some acquaintance, I will ask for your indulgent attention to some remarks on "The widening of the scope of abdominal surgery from life-saving to health-restoring operations."

Delivered before the Canadian Medical Association at Edmonton, August 12th, 1912.

It is interesting to recall the fact that abdominal surgery is only a little over a hundred years old; because, although various abdominal operations have been performed by heroic surgeons from the earliest times, it was the establishment upon a secure basis of the operation of ovariotomy that secured the proper recognition of abdominal surgery generally. The first successful ovariotomy was one of the triumphs of the New World, for it was performed by Ephraim McDowell, of Kentucky, in the year 1809. Naturally, this historical case did not by itself establish ovariotomy upon a secure basis; on the contrary, for many years there was much opposition and there were few cases. McDowell himself performed the operation only twelve times, with eight recoveries; and for the span of a generation the attitude of the profession was mainly one either of scepticism or of more or less thinly veiled disapproval. The next important advance was made by Charles Clay, of Manchester; his first successful ovariotomy was in 1842, and in all he operated on three hundred and ninety-five patients, with one hundred and one deaths, his mortality being thus about 25 per cent. Think of the courage that must have been required to persevere in the performance and the advocacy of an operation that was attended, at its best, with a mortality of 25 per cent. In 1861, Tyler Smith, speaking from the presidential chair of the Obstetrical Society of London, could utter these pessimistic words, "In the long run, I believe, the results cannot be favourable, either in general or special hospitals." Happily, Tyler Smith's gloomy forecast has not been fulfilled; and by way of illustration and commentary I may mention that at the Chelsea Hospital for Women during the twenty-five years, 1885 to 1910, eight hundred and forty-eight ovariotomies were performed, with forty-seven deaths, giving a mortality of 5·5 per cent.; and if we compare the beginning and the end of this period, we find that in the first five years there were seventy ovariotomies, with nine deaths, or 12·8 per cent.; whilst, in the last five years, there were two hundred and four ovariotomies, with seven deaths, or 3·4 per cent. The results in general hospitals, which at one time were deplorable according to our present standard, are now practically as good as in the special hospitals. Comparing my own cases at the two hospitals with which I am connected, one a general and the other a special hospital, I find that at the Prince of Wales' General Hospital, Tottenham, I have had one hundred and forty-eight ovariotomies with five deaths, a mortality of 3·3 per cent.; whilst at the Chelsea Hospital for Women I have had one hundred and six ovariotomies with three deaths, or 2·8 per cent.

Naturally, the later results are rather better than the earlier ones; the figures for the last ten years, from July, 1902, to July, 1912, for the two hospitals combined, work out at two hundred and twenty-three cases with five deaths, or 2·2 per cent.

It would take too long to enumerate the successive steps by which the mortality of ovariotomy was progressively lowered; nor can I here pay the tribute of recognition and praise to the brave and brilliant workers who, through good and evil report, persevered in perfecting the operation; it must suffice to recall that the three great factors that revolutionized the results of ovariotomy and laid the foundations of modern abdominal surgery, were, first, the discovery of chloroform anæsthesia by Simpson; secondly, the perfection of technique, in which Spencer Wells played such a notable part; and thirdly, the introduction, by the genius of Pasteur and Lister, of antisepsis and asepsis.

It is difficult for us to imagine the performance of an abdominal operation without anæsthesia; and when thinking of the pre-anæsthetic days, probably our first impulse is to thank heaven that we are not called upon to operate under such conditions. It is, therefore, a matter of great interest that we have preserved for us a record of the impressions of a man who operated both without and with anæsthesia. Charles Clay began his work before the discovery of chloroform, and one would have imagined that he would have viewed the introduction of anæsthesia with unmixed satisfaction; yet, in 1863, when he had performed one hundred and eight ovariotomies, with seventy-four recoveries, he appeared to be distinctly doubtful of the value of anæsthesia; for in a paper entitled "Observations on Ovariotomy," we find this curious passage: "With regard to the use of chloroform, I am not certain if this agent has really added to the success of ovarian operations. The first fourteen of my cases were undertaken before it was discovered, and of these fourteen, nine recovered. But, though I willingly admit the almost impossibility of obtaining the consent of females (at the present time) to submit to so formidable an operation without the aid of this valuable agent, and though I am equally convinced that chloroform is of itself one of the greatest boons to suffering humanity, yet, if it could be accomplished, I should infinitely prefer to operate without it, as the patient would bring to bear on her case a nerve and determination to meet so great a trial, which would assist beyond all value the after-treatment; it would also relieve the case from that most distressful retching and vomiting so common after all abdominal operations where it is used to the extent that is required in ovariotomy."

Anæsthesia and improvements in technique conspicuously lowered the mortality of ovariotomy by lessening two of the great risks; namely, shock and hæmorrhage; but even so, the mortality was still very high. In 1878, when Spencer Wells had completed nine hundred cases, there were seventeen deaths in his last one hundred. This was because the greatest danger, that of septicæmia, had not been removed, and it was reserved for Lister to defeat this formidable enemy of the surgeon and of mankind. It is through his labours, and those of his disciples all over the civilized world, that we, at the present day, can undertake these serious operations with light hearts; and when I record before you my last ten years' results, with a mortality of a little over 2 per cent., I do so in no spirit of boastfulness or self-aggrandisement; but in doing so, I place a wreath of veneration and gratitude on the shrine of the mighty dead.

The admission of ovariotomy to a recognized place in surgery was, of course, not a sudden event that could be assigned to a particular date, or even a particular year. The growth of its recognition was gradual, but we may say that twenty-five years ago this recognition was an accomplished fact. By this time, many surgeons, encouraged by the results of ovariotomy, were performing abdominal operations for other conditions. As far back as 1863, Charles Clay performed the first successful hysterectomy for fibroids by the intra-peritoneal method; and in the same year Koeberlé of Strasbourg carried out the first hysterectomy by means of the *serre-nœud* and the extra-peritoneal treatment of the stump. In 1879 Lawson Tait performed the first operation for the removal of inflamed tubes, and the same year witnessed the performance of Battey's first operation, in which healthy ovaries and tubes were removed for dysmenorrhea. In 1883 Lawson Tait established another record by operating successfully in a case of ruptured tubal pregnancy. But the conservative spirits in the medical profession twenty-five years ago opposed the performance of these operations, although they admitted the justifiability of ovariotomy; just as their predecessors of a generation previously had opposed the performance of ovariotomy, they said that fibroids and inflammatory conditions of the tubes did not endanger life, and that, consequently, it was not justifiable to operate for the relief of these conditions. Their opposition appeared, at the time, to be justified by the high rate of mortality, which then ranged from 20 to 30 per cent., whilst the mortality of ovariotomy had become reduced to from 10 to 15 per cent. But, happily for the race, there were surgeons who had the courage to persevere, believing that the mortality of these operations could be brought down, even as had happened with ovariotomy.

Thus the field of abdominal surgery became further extended; to enumerate only a few instances, we may mention the surgery of the appendix and gall-bladder, intestinal surgery, the operative treatment of gun-shot wounds of the abdomen, and operations for intestinal obstruction. Even the field of obstetrics was encroached upon; for while obstetricians were discussing the relative value of craniotomy and induction of labour in cases of contracted pelvis and other forms of obstructed labour, the advance of abdominal surgery made Cæsarean section a safe and satisfactory alternative procedure. At the present time the destruction of a living child, on the ground that there is an obstacle to its birth in nature's appointed way, is viewed with increasing repugnance; and we may look forward confidently to the time when the performance of craniotomy on a living child will be considered, save in very exceptional circumstances, as a relic of barbarism, stamping its perpetrator as an ignorant bungler.

There is no doubt that, while the mortality of abdominal operations remained high, the scope of abdominal surgery was limited in proportion. It is only desperate cases that admit of desperate remedies, and as long as the risk of operation was greater than the risk of leaving matters alone, it was wise and practical advice to recommend patients to endure their sufferings with Christian resignation rather than face the risks of surgery; and patients would have been justified, when operation was advised, in replying in the words of King David, "Let me fall into the hands of God, rather than into the hands of men."

We now come to the consideration of what has happened in the last twenty-five years, and therewith to the more special subject of these remarks, which is the phenomenal extension of the scope of operations, not for the saving of life alone, but for the relief of suffering.

To illustrate how the field of operations has extended in inverse ratio to the rate of mortality, I cannot give you a more graphic picture than is presented in the records of the Chelsea Hospital for Women. I have investigated the records of all the abdominal operations performed at this hospital during the twenty-five years from 1886 to 1910; and grouping them in periods of five years each, we find the results as follows:

Years.	No. of Abdominal Operations.	No. of Deaths.	Percentage Mortality.
1886—1890	126	27	21·4
1891—1895	206	35	17·0
1896—1900	879	50	5·6
1901—1905	1,493	63	4·2
1906—1910	1,880	54	2·8

Thus, while fifteen times as many operations were performed in the last five years as compared with the first five years, the percentage mortality was eight times less.

By way of further illustration, I will take two individual classes of operation, one for the removal of the tubes and ovaries for inflammatory disease, and the other, the removal of the uterus for fibroids. I have chosen these two, because, while these operations are performed in a certain proportion of cases for the direct saving of life, their purpose is even more the relief of suffering and of chronic invalidism. The records of the Chelsea Hospital for Women, taken in the same way as before, are as follows:

OPERATIONS FOR TUBAL DISEASE

Years.	No. of Operations.	No. of Deaths.	Percentage Mortality.
1886—1890	12	4	33·3
1891—1895	22	3	13·6
1896—1900	198	7	3·5
1901—1905	302	10	3·3
1906—1910	363	5	1·3

HYSTERECTOMY FOR FIBROIDS OF THE UTERUS

Years.	No. of Operations.	No. of Deaths.	Percentage Mortality.
1886—1890	14	5	35·7
1891—1895	12	5	41·6
1896—1900	150	16	10·6
1901—1905	345	18	5·2
1906—1910	487	9	1·8

These figures show that, for tubal disease, the number of operations was thirty times greater in the last five years, compared with the first five; and the percentage mortality was twenty-six times less. In the case of hysterectomy for fibroids, the number of operations was thirty-five times greater and the mortality twenty times less.

I doubt if the whole range of surgery could show any other two operations that presented such an extension of scope and such a rapidly diminishing mortality within a space of twenty-five years. Surgery has long held an honoured place as the saviour of those doomed otherwise to die: the work of the last quarter of a century has given her an equally just and an even wider claim to be regarded as the restorer of those who are otherwise sentenced to what many feel to be worse than death, and that is, chronic invalidism and disablement.

A remarkable feature of this transition has been the corresponding change in the attitude of the general public towards surgical intervention. Formerly, an operation was regarded as a necessarily desperate remedy involving a perilous descent into the valley of the shadow of death; and it was only the power of a Christian faith or a stoical fatalism that enabled them, as Milton was taught by his Heavenly Muse

> "to venture down
> The deep descent, and up to re-ascend
> Though hard and rare."

The operating theatre presented itself to the popular mind as a chamber of execution, over which hung the sign of the dripping blade, while about it lingered the echoes of the last sighs of departing souls. Now this same theatre has assumed, rather, the character of a temple of healing, with the whilom executioner transfigured into the High Priest. That which was a River of Styx, dark and cold, is now a Pool of Bethesda; and the ill-advised and taciturn Charon has been metamorphosed into the angel that troubles the pool as a signal of healing.

This change in the attitude of the public towards surgical operations is not limited to any one class; we find that the intelligent and highly-educated among our patients have a considerable knowledge of what is involved in various operative procedures, and of the attendant risks and after-results; and, because they are well-informed, they exhibit a well-reasoned confidence in submitting to operative treatment. On the other hand, the patients that form the greatest proportion of our hospital cases have but little knowledge of what is implied by operation, beyond the fact that they are sent to sleep and something is done; but their readiness to accept an operation as the proper treatment for them is equally great; all they ask is the assurance that it is for their good and that they will feel nothing; and we find that their confidence is born of their experience of what such treatment has done for their friends.

There is no doubt that implicit confidence on the part of our patients imposes upon us an added burden of responsibility in deciding what advice we are to give them; for, if their confidence is small, they will probably seek and obtain several opinions, and then make their own choice; but if their confidence is great, they will accept our opinion without question and act upon it without demur. But when the stage of advice is passed and that of action is entered upon, this confidence is of the greatest value to us, because the success of our operative work is immeasurably assisted by the trustful coöperation of our patients. This is true of those conditions involving questions of life and death, where it is our duty to say, "You must undergo an operation in order that your life may be saved," and it is equally true of those conditions where an operation is a matter of choice rather than of necessity, and where our formula will rather be this, "You will be well-advised to undergo an operation in order that your health may be restored." In my own practice, the distinction that I adopt is that I *urge* an operation of necessity, and if the patient appears unwilling I use all my powers of persuasion; but I *advise* an operation of election, and after explaining the pros and cons I leave the choice to the patient.

I have dwelt at some length on this question of the attitude of our patients, because it is a most important factor in the consideration of operations for the restoring of health, as distinguished from operations for the saving of life.

Let me now say a few words about some of those conditions, in the department of gynæcology, whose treatment by surgical means has been rendered possible by the fall in the death-rate of abdominal operations.

We may begin with uterine displacements. These are conditions that never prove fatal, and therefore we could not advise for their relief any operative treatment that was attended by an appreciable mortality. And so it was only when the mortality of abdominal operations generally was showing a marked decline that the surgical treatment of displacements came into vogue. It is interesting to note that the first abdominal operation for retroversion was an extra-peritoneal one, namely the Alexander-Adams operation; at that time the peritoneal cavity was still a kind of "*noli me tangere*," and every time it was opened there was a threat of septicæmia. Modern asepsis has robbed cœliotomy of its terrors; we have learnt the ways of the peritoneal cavity, and ceased to fear it. We now know that if we can leave the vulnerable diaphragmatic area alone, and avoid undue handling of the bowel, and refrain from introducing into the peritoneal cavity irritant chemical antiseptics, the peritoneum is a tolerant structure well capable of looking after its own interests.

It was not long, therefore, before intra-peritoneal operations were introduced for the treatment of displacements, most of them originating on this side of the Atlantic. We had ventro-fixation and ventro-suspension of the uterus, with their modifications, and the various procedures for the intra-peritoneal shortening of the round ligaments. It is not necessary in this place to discuss the merits and demerits of these different operations; the one chiefly practised at the Chelsea Hospital for Women has been what we call hysteropexy, and in the twenty years, from 1891 to 1910, this operation was performed in five hundred and eighty-four cases.

The value of these operations is two-fold; in the first place, many patients are cured who cannot be relieved by other means, for example, cases of adherent retroversion and some cases of prolapse and procidentia. In the second place, patients can be saved from years of pessary treatment. I have before now defined pessaries as a necessary evil, that is, they are necessary sometimes, but evil always; and I have found no reason to alter this definition. It would be possible to draw up a serious indictment of pessaries: the unpleasantness of frequent examinations; the drawback of being chronically under the doctor's hands; the discomforts of irritating discharges and their attendant douchings; the risk of serious ulcerations into the bladder and rectum, of septic infection, and of the development of carcinoma as the result of retained pessaries, examples of which I have seen. If, by means of a safe operation, patients can be saved from all this, and if they desire such relief, surely they are entitled to have it. The radical cure of hernia is considered justifiable, to obviate the discomfort of constantly wearing a truss; why not then the radical cure of a uterine displacement, to obviate the necessity for the more obnoxious pessary? Well, the progress of abdominal surgery has opened up this field of relief to women and it has resulted in a wide relief of suffering and emancipation from disablement.

Passing on to the subject of inflammatory disease of the uterine appendages, we have to do with a somewhat graver condition, because, in a certain proportion of these cases, the patient is seriously ill, and we are called upon to operate in order to save life; and with the remainder, which forms the great majority, it is not a matter merely of obviating discomfort, but it is a question of saving women from prolonged illness, constant suffering, more or less complete invalidism and disablement. Some of these women, in the poorest classes, are the bread-winners, and for them disablement is a worse evil than death.

Now, as long as the operative mortality was high, these patients could not be advised to undergo surgical treatment; and up to twenty years ago the mortality ranged from 20 to 30 per cent. It is true that Lawson Tait, as far back as thirty years ago (or, to be precise, in 1883), was able to record sixty-two cases without a death; and his results justified him in taking up a position far in advance of the current medical opinion of his time, and in saying "we could not stop short of dealing with matters that affect life only. Hydrosalpinx was a frequent cause of the most intense suffering and therefore he would, and did, remove it by surgical operation without hesitation." By degrees, as the figures of the Chelsea Hospital for Women show, the mortality became lower and lower, the figures for five successive quinquennial periods being, 33·3, 13·6, 3·5, and 1·3. It was not, however, on the ground of mortality alone, that these operations met with opposition in certain professional quarters; it was objected that, after these operations, patients remained chronic invalids, that they were unsexed and rendered unfit for wifehood, that they became, at the best, hysterics; and at the worst, lunatics. These objections were chiefly theoretical; and two years ago I was able to show, from a detailed investigation of the after-results of these operations, based on two hundred cases in which both ovaries were removed, that 70 per cent. of the patients regained perfect health and vigour and retained their sex-instincts; that the legends of women developing bass voices and growing beards were pure romance; and that there was no more tendency to insanity after double ovariotomy than there was after any other abdominal operation.

Now, what happens to patients suffering from chronic pelvic inflammation who are not treated by surgical means? Here and there we may find a case where symptoms subside and health is more or less completely regained; but this is a rare event. Many of these patients swell the ranks of those who are unjustly described as hysterical and neurotic. How often it has happened to me to have a patient sent up with a letter saying that she exhibited marked neurotic tendencies; and on examination some chronic pelvic disease has been discovered. These cases have constituted in the past a great reproach to the medical profession; such patients often suffer intermittently; they are seldom acutely ill, but they are never completely well; and because there is not much to show for their sufferings, and because, on occasion, they are able to make an effort to appear as other women, they have been treated as neurotics and almost as malingerers; they have been drenched with bromides and valerian; they have been sent from spa to spa and soaked in brine-baths and mud-baths; they have been driven to seek relief in alcohol, morphia, or cocaine; or they have found a doubtful haven among the faith-healers and the Christian Scientists. I contend that we have no right to label any woman as neurotic, unless we can be certain that she has no organic disease; and even then we shall be wiser if we suspend our judgement.

Think of the amount of suffering saved, the workers that have been restored to the position of earning their livelihood, the relief to the community in the conversion of dependent invalids into sound and useful members of the body corporate; think of all this amount of good done as represented by the eight hundred and forty-one women who have been cured of diseased appendages in the last fifteen years at the Chelsea Hospital for Women. Then add to these the thousands of women similarly cured in other institutions all over the civilized world, and you will gain some idea of the good that has resulted from the decreased mortality of abdominal operations.

We come, thirdly and lastly, to the subject of fibroid tumours of the uterus. Here we have a condition more inherently dangerous than the other two, leading more often to a directly fatal result; and, short of a fatal issue, causing prolonged suffering and disablement. Here, again, we have a condition in which the operative death-rate must exert a marked influence on the advice that we give to our patients. Twenty years ago this operative death-rate was from 20 to 40 per cent.; and it is evident that it was only in cases where a fatal result was threatened that so dangerous an operation could be recommended. In the much larger majority of cases, there was no question of life being at stake, the reason for operation would be only the relief of suffering, and it is seldom that patients yearn for death or are willing to incur a very great risk, merely to be relieved of suffering. It is better, after all, to live as an invalid than to die cured. Now, when a patient with fibroids has to be told that the resources of medicine are exhausted and that the succour of surgery is more cruel than kind, it is a great comfort to be able to hold out some kind of hope, however unsubstantial; and so a fairy tale was built up and decorated to represent a scientific theory, to the effect that the menopause was the natural cure for fibroids. And patients were told, in all seriousness and good faith, "You must wait for the change of life, and then these tumours will shrink and disappear, and you will get well." And the patients went on patiently draining their life-blood away, carrying enormous tumours that prevented them from getting about, hoping against hope that the delayed menopause would arrive, like some millennium, to give them peace. Some of them survived the worst troubles and escaped with their lives, a few of them regaining a measure of health, and the remainder remaining more or less permanent invalids. Others found that the menopause, when it came, came not to bless but to curse, bringing in its train degenerative changes, infection, sepsis, and death. Now I do not know what is the state of current medical opinion in progressive Canada; but I can tell you that in some parts of the Old Country we find a tragic thing, and it is this: That while the operative conditions have revolutionized the death rate of hysterectomy, causing a drop from 30 to 2 per cent., the hoary myth of the menopause is found to survive, even in high places, and patients are still condemned to years of suffering who might be quickly and safely cured. Look once more at the record of hysterectomies for fibroids at the Chelsea Hospital for Women; observe that in the last five years under consideration four hundred and eighty-seven operations were performed, with a mortality in all cases—serious as well as simple—of 1·8 per cent.; and I think that you will agree that I am justified in the contention that all fibroids should be operated upon (unless some weighty reason to the contrary can be shown) in the early stages, as soon as symptoms arise, and without waiting for the development of grave complications; and that, whereas, in the early days hysterectomy had to be reserved for cases in which it was required for the saving of life, the progress of abdominal surgery has brought it within the scope of operations that are justifiably performed for the relief of suffering and for the restoration of health.

In bringing these somewhat fragmentary remarks to a close, it may be well to guard against one possible misconception. Let me then state explicitly that the fact that an operation is safe is not, in my opinion, a sufficient reason for operating, if a cure can be obtained by other methods. I have no sympathy with the attitude of mind of Tennyson's imaginary surgical enthusiast, described in the lines—

> " indeed, it was said of him
> He was happier using the knife than trying to save the limb."

On the contrary, I am not ashamed to admit that I have a feeling of reverence for the human body; and that, in my opinion, the only sanction that can be accorded to surgical interference is that which is derived from the conviction that life, health, or comfort must otherwise be sacrificed. Having made this surgical profession of faith, I feel bound to state my belief that, on the other hand, we are not justified in refusing surgical relief when health and usefulness are at stake, any more than we should be entitled to withhold the aid of surgery when life is threatened—provided always that the ratio of the operative risk to the risk of non-interference be accorded its proper weight and consideration. In other words, while the grave issues of life and death justify great risks, the lesser issues of health and infirmity warrant only slight risks. It has been my object to show that the development of abdominal surgery and the extension of its scope have enabled us to realize the harmonious adjustment of this ratio, and to place the resources of our surgical art, with ever lessening risk, at the disposal of an ever-widening circle of suffering humanity.

TYPHOID PLEURISY

By F. G. Finley, M.D.

THE occurrence of pleurisy in the course of typhoid has long been recognized, but it is only since the discovery of Eberth's bacillus that it has been possible to classify the cases from an ætiological standpoint. There are now on record a considerable number of cases in which the typhoid bacillus has been found in pure culture, described mostly in French literature.

The following paper is based on a study of the literature of the subject and an analysis of nineteen cases which have occurred at the Montreal General Hospital in twenty-one hundred cases of typhoid treated from 1897 to June, 1912.

The following cases came under observation recently.

Case 1. Typhoid Fever. Chronic endocarditis (aortic and mitral). Pleurisy, with typhoid bacilli. Phlebitis. Male, aged twenty-four, admitted to hospital December 24th, 1911, for fever, pain all over, and cough.

He had acute articular rheumatism seven years ago, and since then he has suffered from dyspnœa and weakness on exertion. On December 19th, he felt feverish and chilly.

Present condition. He is well nourished, skin moist, a few faint red spots, somewhat like rose spots, on the lower chest. Temperature, 101·2° to 104°.

The pulse is collapsing, rather large, and capillary pulsation is present. The apex is in the nipple line and there is a systolic murmur at the apex and a to and fro murmur at the base of the heart. There is cough, with a small quantity of muco-purulent sputum, slightly blood tinged, no abnormal physical signs.

The spleen is not palpable, but its area of dulness extends to the costal border. The abdomen is otherwise normal.

December 27th. Widal positive, 1—80.

January 7th. The case has been running a moderately severe course. Numerous rose spots, epistaxis, diarrhœa, and temperatures of 101° to 104·8°, gradually falling. To-day he complains of severe pain in the right side of the chest. Temperature rose to 104·8° in the evening.

January 8th. Pain in chest very severe with dyspnœa and dilatation of alæ nasi. There is dulness in the lower axilla and behind, from the spine of the scapula down, with feeble breathing over the dull area and rigidity of the abdomen below the right costal border.

January 9th. A coarse pleural friction on right side with coarse crepitation behind.

January 12th. 20 c.c. of sero-fibrinous fluid was obtained from the pleura, in which a pure culture of bacillus typhosus was obtained by Dr. Rhea. Friction is still present. Dulness as before, with feeble breathing and diminished fremitus.

January 16th. Pain at back of left knee with tenderness extending down the leg, right calf 27½ cm., left 27 cm. Temperature 100·2°. The friction has disappeared. Subcrepitant rales present over lower part of dull area of lung behind, absence of vocal resonance and fremitus. No cough or sputum.

January 19th. Pain in right leg. Temperature rose 1° yesterday, 100·8°. Tenderness and induration of right calf and along the line of the internal saphenous vein into Hunter's canal.

January 26th. Fine crepitation over dull area of lung from spine down, absence of vocal resonance and fremitus.

February 20th. Signs over lung as before, but with only a few fine crackles.

March 2nd. Discharged well.

In this case pleurisy developed on the twentieth day, proved by bacteriological examination to contain a pure culture of bacillus typhosus, and evidence of a mild phlebitis in the left leg on the twenty-ninth and in the right leg on the thirty-second day of the disease. Crepitation was very persistent, suggesting an underlying lesion in the lung. Galliard has directed attention to the importance of infarction as the origin of pleurisy in typhoid. From the later date of the phlebitis, it seems improbable that an embolic infarct was derived from this source. The frequency of pulmonary infarcts in chronic valvular lesions is generally recognized, and in this case it is possible that the cardiac affection was responsible for a pulmonary embolus, derived from one of the right cardiac cavities.

Case 2. Typhoid Fever. Acute right-sided pleurisy, developing on the eleventh day. Bacillus typhosus in one of three cultures in pleural fluids, also staphylococci. Chill, high temperature, and rusty sputum on the fourteenth day.

Med. Case No. 7, 1912. Male, aged thirty-five, iron-moulder, was admitted to hospital on January 2nd, 1912, with headache and aching in the bones. He had suffered for twelve days with backache, headache, chills, and fever.

Present condition. On the day following admission, the temperature ranges between 99·8° and 102·4°. The pulse—72. A few rose spots are present on the abdomen, the spleen is enlarged on percussion, but is not palpable. The heart and lungs are normal. A blood culture proved negative.

January 3rd. White blood count—4,000. Negative Ehrlich diazo reaction.

January 11th. Pain in right side, but not severe.

January 12th. Severe pain in right side. A pleural friction is present in the right lower axilla. Dulness from the spine of scapula to the base behind, the breath sounds very feeble, subcrepitant rales are present over the base, and absence of vocal resonance and fremitus over the dull area. The temperature since admission has varied from 98·2° to 102·4°. Widal positive.

January 15th. He had a rigour last night, the temperature rising to 105°. He complains of severe, catching pain. There is some viscid, dark red, blood-coloured sputum, respirations 32, with dilatation of alæ, pulse 112. Signs in chest as before. White blood count—7,800.

January 16th. Red viscid sputum continued. Signs of fluid in right pleura continue, with crepitation at both bases. Respiration, 28. Pulse, 108. Maximum temperature, 104·4°.

January 19th. Pleural friction continues, with a large quantity of frothy, rusty brown sputum. Fluid aspirated on 17th was serofibrinous. Bacteriological examination showed a moderate growth of staphylococcus.

January 23rd. Bacillus typhosus present in pleural fluid. Defective expansion on right side, dulness from spine down, bronchial breathing, bronchophony, ægophony, and a few crepitations.

January 29th. No growth from pleural fluid.

January 31st. The temperature fell to normal. Signs in chest as before, with the exception of crepitation, which has disappeared.

March 3rd. Discharged well. Defective expansion, slight dulness and feeble breathing, with normal resonance and fremitus at the right base.

This case ran a mild course of typhoid until the development of pleurisy, which occurred on the eleventh day. Three days later there was a severe chill, followed by rusty sputa. The physical signs in the left lung were somewhat masked by the pleural effusion, but it was noticed that crepitation persisted almost throughout the illness, and longer than is usually found in pleurisy. No importance can be attached to the bronchial breathing and bronchophony, as these signs are so frequent in pleurisy. The rusty sputum was, however, clear evidence of a pulmonary lesion, either an infarct or a broncho-pneumonia. In point of time the pleural symptoms developed first. The pure culture of bacillus typhosus is a good proof of its typhoid character.

The question as to whether the pleurisy was secondary to an infarct in the lung cannot be answered with certainty. Clinically the pulmonary symptoms developed after the pleurisy, but this fact does not exclude the possibility of an earlier infarction as the cause of the pleuritic effusion.

The incidence of pleurisy varies considerably in different epidemics of typhoid and in different localities. Most writers, however, agree that it is one of the rarer complications. In twenty-one hundred cases collected from the Montreal General Hospital records, it occurred nineteen times. In this series, however, pleurisies occurring in well marked pneumonias or found at autopsy as a complication of such, have been excluded. J. McCrae, in an analysis of seven hundred and seventeen cases at the same hospital, found fifteen cases, or 2 per cent., whilst T. McCrae, at the Johns Hopkins Hospital, states that there were 2·1 per cent. of pleurisies in his cases of typhoid. Lesné and Ravaut found pleurisies with pure cultures of the bacilli seven times in ten hundred and fifty-five typhoids, or ·66 per cent. Other writers have reported much higher numbers, Heymann giving 14 per cent., and Barach, in five hundred cases, four effusions and sixteen plastic cases, of which three were associated with pneumonia.

Although pleurisy usually develops towards the middle or latter part of the febrile process, yet it may arise at the onset, or after defervescence. In the nineteen cases, the average period of onset was the twenty-fifth day. The two earliest cases began on the first and fourth day, and the two latest on the thirty-ninth and ninety-sixth days.

Typhoid setting in with well marked pleuritic symptoms, termed by French writers "pleuro-typhoids," are amongst the most interesting varieties of the disease, as the primary disease may, at least at the onset, be entirely overlooked. Of the two cases in the series, one was admitted a month after the onset of pain in the side, and presented well marked signs of typhoid with a pleuritic effusion. Even long after defervescence pleurisy may arise. Siredey found the typhoid bacillus after three weeks of normal temperature, a fact which is comparable to the occasional late development of other complications, such as phlebitis or bone disease.

The symptoms do not differ materially from ordinary pleurisy. In our cases pain was usually present early, and was sometimes of an excessively severe character. The temperature, pulse, and respiration often showed a slight increase, and fluid was commonly found in moderate amount within a couple of days. In addition to the usual signs of fluid, a friction was heard in most instances. One feature frequently noted was the persistence of crepitant or subcrepitant rales during the period of effusion, a sign suggesting a simultaneous lesion of the lung or bronchial tubes. A point of some practical importance is the occurrence of pain referred to the abdomen and often associated with rigidity of the abdominal wall. In some instances these symptoms were so marked as to suggest perforation of the bowel.

The character of the fluid may be sero-fibrinous, hæmorrhagic, or purulent. Owing to the small amount of fluid present, puncture was only carried out in a minority of cases. Five were sero-fibrinous, two hæmorrhagic, and two purulent. The ratio of sero-fibrinous cases would doubtless have been increased had exploratory puncture been uniformly carried out. Remlinger found six serous, one hæmorrhagic, and eight purulent cases in his series, and states that the later the pleurisy appears the more likely is it to be purulent, the ordinary pus-producing organisms being then more frequently present.

Of the purulent cases, one began as a sero-fibrinous exudate, becoming purulent after five tappings. A good recovery was made after thoracotomy. In the other, the fluid was at first turbid, and subsequently could not be located. The temperature, however, continued elevated, and on the fiftieth day of the illness pus was expectorated. The temperature fell to normal on the same day, and the patient recovered completely. Although recovery has been recorded after repeated aspiration, it is doubtless safer to resort early to operative measures.

There are on record a considerable number of cases in which pure cultures of Eberth's bacillus have been recovered from the pleural fluid. The presence of the bacillus in pure culture is fairly conclusive evidence of the typhoid character of such an effusion. It may be objected that pleurisy resulting from tuberculosis may arise in the course of typhoid, and that the fluid might easily become infected with typhoid bacilli. There are, indeed, on record two remarkable cases, one published by Charrin and Roger, and the other by Kelsch, in which typhoid bacilli were obtained in the pleural fluid and in which the autopsies showed tuberculous lesions in the lungs, without the intestinal lesions of typhoid.

Achard endeavoured to exclude tuberculosis by injecting a guinea pig with the pleuritic fluid from which he obtained typhoid bacilli. As the animal remained free from tubercular changes, he considers the case to be due to the bacillus of Eberth. Remlinger found the typhoid bacillus in pure culture in seven cases and the staphylococcus in one only. He therefore regards the great majority of pleurisies in the course of typhoid as being of specific origin.

In the only fatal case in our series, Case 3, the proof of the typhoid origin is complete, and in none of the nineteen cases was there any clinical evidence of tuberculosis.

Agglutination is usually produced by the pleural fluid, although it is usually much weaker in this respect than the blood. Achard, however, records a case in which the reverse was noticed, the blood agglutination 1—10, and the pleural fluid 1—100. This feature, and the bactericidal character of the fluid, sometimes prevents the bacilli from being recovered in cultures. Thus, in Case 2, they were only found after two punctures, whilst in several of the cases collected by Remlinger the fluid became sterile in the later stages.

Typhoid bacilli occur in all types of effusion, and even in purulent cases may occur alone, as was first pointed out in a case recorded by Weintraud in 1890.

The leucocytes have not often been counted, but they usually present a rather low count. In Case 2 there were only 7,800 after the onset of pleurisy, as compared with 4,000 before.

On the cytology in the effusions there is some discrepancy in the statements of different writers. Pfeiffer found a great predominance of small mononuclear cells and only a few polynuclear, and most writers confirm this statement. Ravaut and, later, Widal lay stress on the presence of large endothelial cells.

The course of typhoid pleurisy is almost invariably benign, the fluid usually remains small in amount and is absorbed in a period of from two days to several weeks, leaving but little trace of pleural thickening and adhesions.

The only fatal case of typhoid pleurisy in the series was the following:

CASE 3. Typhoid fever and hæmorrhagic pleurisy due to bacillus typhosus. Autopsy. (This case is recorded by McNaughton and Rhea.) Male, aged twenty-seven, admitted October 3rd, 1910, with sore throat, cough, and loss of appetite.

The patient had high temperatures, delirium, rose spots, bronchitis with muco-purulent sputa, and feeble heart action. He died of toxæmia on the thirty-fourth day. No evidence of pleurisy was observed during life. Widal positive.

Autopsy. The left pleura contains 375 c.c. of bright red fluid. The pleura is bright red and is covered in places with a fibrinous exudate. The lungs present a number of raised, red, firm areas, from 3 to 5 mm. in diameter. At the lower anterior margin of the lower left lobe there is a wedge-shaped, elevated, dark red, very firm area, extending into the underlying lung tissue. About the periphery of this area is a narrow, bright red zone. Spleen, 200 gm. Moderately firm. Typhoid ulcers in the intestine.

Anatomical diagnosis: Typhoid fever. Acute hæmorrhagic pleuritis (left). Infarct of the lung (left). Broncho-pneumonia. Hypertrophy of spleen and mesenteric glands.

Cultures from the left pleural cavity and the heart's blood showed a pure culture of bacillus typhosus, agglutinating with a known typhoid serum in one hour in 1 to 40 and 1 to 80 dilution.

Pathogenesis. With one exception, reported as Case 3, the pleurisies occurring in the post-mortem room in cases of typhoid were associated with severe pulmonary lesions, especially lobar pneumonia or abscess of the lung; they were mostly plastic and played a very subordinate part in the clinical and pathological characters of the cases.

Galliard has insisted on the importance of an infarct of the lung preceding and causing pleurisy, and records two clinical cases. In Case 3 an infarct case was present on the same side as the effusion, and may be regarded as the primary focus for the pleural infection.

The persistence of crepitation during the course of the malady and the blood-stained sputum, which is often present, also suggest an underlying pulmonary lesion in many of the cases. Bronchitis, with pulmonary congestion, is mentioned by Normandin as a probable source of origin in some cases, but this complication is so common that it is difficult to estimate its influence.

An unusual origin is recorded in one of Remlinger's cases in which an empyema originated in a large abscess of the right lobe of the liver.

Both Remlinger and Labiche notice the preponderance of these pleurisies on the left side, the former writer finding eleven left, five right, and three instances bilateral. Labiche suggests in explanation that the spleen is the focus of infection—an explanation which has little to recommend it. In our cases, the figures are reversed, eleven right- and four left-sided pleurisies being noted.

The frequency of phlebitis was rather striking in our cases. In seventeen instances, six suffered from this complication and eleven were free. As a rule, the pleurisy developed first, as in Case 1. It does not seem probable, therefore, that an embolus from the vein was the cause of pulmonary infarction and pleurisy.

CONCLUSIONS. 1. We may conclude that pleurisy occurs in from one to two per cent. of cases of typhoid, although in some epidemics a much larger proportion may occur.

2. That most cases of pleurisy in typhoid are due to the typhoid bacillus, and that there is a preceding lesion of the lung in many cases.

3. Typhoid pleurisy is usually a benign condition, and does not materially add to the danger of the disease.

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DEEP INJECTIONS OF ALCOHOL FOR TRIFACIAL NEURALGIA—ONE HUNDRED AND TWO CASES

By D. A. Shirres, M.D.

AT the Canadian Medical Association meeting in Ottawa, six years ago, I read before you a paper on the technique and results of deep injections of alcohol for the cure of trifacial neuralgia, and reported seven cases that had been operated upon. Since then I have injected ninety-five cases, over seventy of which were done in the last three years. The results have been very satisfactory, and in every case treatment succeeded in giving immediate relief from pain. I have been very fortunate in that no serious or permanent complications have resulted from the operation.

My method has been the same throughout, Levy and Baudouin's. As far as I have been able to ascertain reports from patients operated upon, successful results have been obtained in the relief of pain, up to the present time, in about two-thirds of the cases, but it is hard to estimate the exact percentage of cures, as it is impossible to keep in touch with all of them. Of the twenty that I treated up to five years ago, nine that I heard from are still free from pain. The few cases that returned to be reinjected were largely those that had not gone through the full course of treatment. The pain disappears, in most cases, after four injections, but I make it a point, if possible, to give two more, and also try to have the patient remain on for ten days after the last injection.

About ninety per cent. of my patients come from a distance, and it is very hard to keep them under observation as long as I would wish, for they are anxious to return home as soon as they are free from pain. Speaking generally, I feel that in the large majority of cases, where treatment is thoroughly carried out, I can promise the patient relief from neuralgia for three or four years, and even longer. I have never had a case in which the pain returned within a year, if the regular treatment was given.

In my experience, women are more liable to be affected with the disease than men, and the left fifth is more often involved than the right. The second branch is more often affected than the third,

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Read before the Canadian Medical Association at Edmonton, August 10th, 1912.

and in no case have I had the ophthalmic division involved alone. In but a few cases was the ophthalmic division affected to the same extent as the other branches, and then injection of the two lower divisions gave relief from pain in it. At first I injected only the division where pain was complained of, but for the last three years I have done both middle and inferior branches, having found that though pain is not complained of in a certain branch, yet irritation of it will sometimes produce, reflexly, pain in the other branch. In some of our cases we were able to demonstrate this by stimulating the inferior branch by electricity, whereupon pain was induced in the middle branch, and vice versa. Dr. Patrick describes this under the name of dolor-genetic areas.

Relief from pain is as readily obtained in cases of long standing, where the patient is advanced in years and the pain is severe, as in mild cases of short duration. Sex does not seem to have any influence on the prognosis.

Cases of typical tic douloureux are not hard to diagnose, but there are neurasthenic conditions which bear close resemblance to trifacial neuralgia, three or four cases of which have been sent to me for operation. If such cases be operated upon—and it has been done—the paresthesias resulting from the injection become a very irritating feature to the neurasthenic individual; in fact, he is worse off after the injection than before, and then the doctor receives a great deal of censure. In a case of trifacial neuralgia, on the other hand, the paresthesias following the injection cause little, if any, discomfort, perhaps because the patient is less sensitive to minor sensory disturbances than the normal individual.

It has been my practice, if possible, to have my patients operated upon in the hospital, and kept in bed for twenty-four hours after the operation. In quite a number of cases there was a slight rise in temperature, a degree or so, a few hours after the operation. I allow forty-eight hours to intervene between each injection, and in a very few cases only have I injected two branches at the one sitting. This was done where the patient wanted to leave soon, or in which repeated injections failed to bring about results quick enough. In the majority, six injections were sufficient, though some required eight, and a few as many as ten. In ninety-five per cent. of my cases no anæsthetic was used, and only in some of the very old or very nervous was it demanded.

In giving the injections I have never met with any bad results. This, I believe, is chiefly due to my refusal to operate upon cases where organic nervous disease, sinus trouble, tumour, migraine, simple neuralgia, or disease of the teeth or bones was present, and by carefully excluding neurasthenic cases, which sometimes very closely resemble tic douloureux. Two cases that I saw in the city of Montreal, which had been operated upon, lost the sight of one eye and had paralysis of the seventh and eighth nerves. Both were incipient cases of locomotor ataxia. Quite a few cases of true tic douloureux have been injected by medical men, in which serious consequences followed the operation. It is unfortunate that cases of this kind are not reported, for it is well to know the bad, as well as the good, results of this method.

Before attempting to give the deep injection of alcohol, I carefully studied the anatomy and typography of the skull, and also injected a number of different cadavres with 2 c.c. of Loeffler's blue. In this way I was able to find out whether I had reached the nerve correctly with the needle. Only yesterday, before sitting down to write my paper, I injected two other cadavres with the Loeffler's blue, and found, as in my earlier experiments, that on opening the skull the Loefflers blue had deeply stained the nerves at their exit from the skull. The dye also permeated both foramina, colouring the dura and brain in the middle fossa. In one or two cases, some of the small arteries in the fissure of Sylvius were injected with the dye. In these experiments very little force was employed in emptying the syringe. If, therefore, the dye when injected at the exits is able to travel through these openings into the base of the brain, in all likelihood the alcohol in the ordinary injections enters the skull cavity. Thus, the diffuse headache, the rise in temperature, the involvement of some of the cranial nerves, the mild emotional shock, etc., that have been reported, could be readily accounted for. Dr. Dana reports, in some of his cases following the injection, that "a sort of psychosis is added to the neurosis and the operation does not seem to be of so much benefit."

Method of Operation. I use a straight needle 12 cm. long and 1·75 mm. thick, with a stylet, the somewhat rounded edge of which is flush with the needle point when the stylet is pushed home. It is graduated in centimetres from the point up to five, so that the operator may, at all times, know just how deeply he has penetrated. The proximal end is fitted to receive the threadless nozzle of a syringe holding 2 c.c. or more. The solution used is, cocain hydrochlorate, $\frac{1}{12}$ grain, alcohol, 80 per cent. solution, 1 drachm. The amount to be injected varies from 2 c.c. to $2\frac{1}{2}$ c.c.; but 2 c.c. is the amount generally used. The solution should be made up fresh for each operation.

To Inject the Superior Maxillary Nerve. A point of entrance is selected at the lower border of the zygoma 0·5 cm. behind a perpendicular let fall from the posterior edge of the orbital process of the malar bone. This edge is easily felt. The needle is directed straight in with an inclination upwards; that is, perpendicular to an antero-posterior line, but so inclined upwards that the point at the depth of 5 cm. shall be on a level with the lower end of the nasal bones or slightly lower than the posterior pole of the orbit. At this depth and angle, the point of the needle is supposed to engage the nerve as it emerges from the foramen into the pterygomaxillary fossa.

Injection of the Inferior Maxillary Nerve. The point of entrance is at the lower border of the zygoma 2·5 cm. in front of the anterior root of the zygoma, a descending process which forms part of the anterior wall of the auditory canal and the posterior limit of the glenoid fossa. The needle is directed somewhat backwards and slightly upwards, and at 4 cm. should reach the nerve.

In a large number of my cases, a hypodermic of morphia, $\frac{1}{4}$ grain, is given half an hour before the operation. This permits of handling the patient for the preparation of cleaning up, etc. The point of entrance being selected, the skin and superficial tissue is cut with a knife, as I prefer to have the stylet in the needle during the process of its insertion. The act of pushing the needle back to the nerve should be done slowly, and obstacles that are met with, such as bony projections, etc., are easily made out from their depth and situation, and thus overcome. A thorough knowledge of the anatomical relations should be obtained before operating. In most cases, the moment the needle touches the nerve the patient complains of reflex pain over its area of distribution. The alcoholic solution should be injected slowly, and the first few minims that escape from the point of the needle cause a severe spasm. If this does not occur you are not in the neighbourhood of the nerve, replace the stylet and hunt about till you get the reflex pain; or try injecting a little more, and see what results are obtained. Having injected what you think is sufficient, taking a quarter of an hour to do so and using very little force, insert the stylet and draw the needle out half an inch; wait a few minutes and then draw it out further, taking about five minutes to withdraw the instrument. Then put a little collodion and cotton over the wound and keep the patient in a recumbent position for at least six hours. Usually a considerable amount of œdema and swelling follows the injection, and the more injections given the more œdema and swelling take place; but it has always disappeared within a week or ten days, even in cases that have had nine to twelve injections.

Dr. Patrick lays stress upon the fact that if the nerve is injected properly, the area of its distribution is analgesic. This has not been my experience, for quite a number of patients that were completely relieved did not show this feature.

In cases that have refused the alcohol injection, of which there are only a few, I have tried alcohol cataphoresis. One that had previously undergone nearly every form of treatment in New York, was treated in this manner five years ago at the Montreal General Hospital. She has been free from pain ever since. Others were relieved for from three to six months. There were a few that did not respond at all, and the injection had to be carried out later.

I might mention here that some five years ago a case of persistent coccydynia, that had been treated in various ways unsuccessfully in the out-door of the Montreal General Hospital, was recommended to my clinic. Feeling that alcohol, being so valuable in tic douloureux, might answer well here, I gave three injections, and the patient has had no pain since. I have had two other cases, one of which has just finished treatment.

As the time is limited for reading this paper, I have refrained from going into details regarding the technique and anatomical structures of the parts in the field of operation. The shape of the head and face varies considerably in different individuals, therefore the details of operation must also vary. In this paper I simply wanted to give you a general idea of the method and results.

THE fourteenth annual meeting of the American Proctologic Society was held at Atlantic City, June 3rd to June 4th. The president was Dr. John L. Yelks, of Memphis, Tenn. A number of interesting papers were read and several case reports were presented. The election of officers for the ensuing year resulted as follows: president, Dr. Louis J. Hirschman, of Detroit; vice-president, Dr. A. B. Graham, of Indianapolis; secretary-treasurer, Dr. Louis H. Adler, Jr., of Philadelphia. The next meeting of the society will take place at Minneapolis, Minnesota.

THE ACTION OF DRUGS ON THE UTERUS

By N. C. Sharpe, B.A., M.B.

Fellow in Pharmacology at the University of Toronto

THE marked advance in our knowledge of the pharmacology of the uterus has led to a long series of experiments being carried out in this department, which were in part designed to control the teaching, and in part to serve as demonstrations for its students. The material thus gathered has served as the basis of the present paper. The action of drugs on the uterus must now be considered from our knowledge of the physiological properties of the uterine muscle. It must be the endeavour to put this clearly before our readers in order that the action of drugs may logically follow.

The uterus is continually undergoing slow rhythmic movements. As usually observed, these consist of contractions of the circular and longitudinal muscular layers. These contractions may be observed in the intact animal, and also in the excised organ when perfused—i.e., when an artificial blood consisting of an oxygenated saline is run through its vessels, or when the organ is placed in a bath of the same solution. The power to execute these movements, therefore, resides in the organ itself. Usually they are not great in excursion or in strength. They are increased at the menstrual period. Undue strength of these contractions probably accounts for the type of dysmenorrhœa often observed in nervous working-girls, in which there are sharp rhythmic pains.

The contractions change in character as pregnancy occurs. In the early stages, they seem more active; they become slower and less frequent as pregnancy advances, but increase in strength till, at full term, the true labour pains occur. After the expulsion of the fœtus they are again not so marked, until the secondary pains expel the placenta. The movements continue during the period of involution, and, indeed, our observations confirm those of Cushny,[1] who states that they are more active then than before labour.

The problems connected with the nervous control of the uterus are as yet not completely decided. It receives fibres from the gangliated cord of the sympathetic. This supply arises from the

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roots between the last thoracic and the fifth lumbar—varying somewhat in different animals—and passes through the white rami communicantes to the ganglia, thence to the inferior mesenteric ganglion, and from there, via the hypogastric, to the uterus. Stimulation of these fibres causes contraction of the uterine arterioles, and relaxation followed by contraction of the uterine musculature in the non-pregnant cat, contraction in the pregnant cat and in the rabbit, whether pregnant or non-pregnant. The fibres pass to both circular and longitudinal coats. It is on these sympathetic endings that adrenalin and ergot act.

It also seems probable that the organ receives a nervous supply from the nervi erigentes, or sacral pelvic nerves, as well, as do the other organs of the pelvis, bladder, rectum, and genitals. Langley and Anderson[2] state that these sacral nerves, which arise from the second to fourth lumber roots, send neither motor nor inhibitory fibres to the uterus, and that those observers who have reported results from the stimulation of them, have stimulated sympathetic nerves as well. Pilocarpine and atropine, which act elsewhere on sacral nerves, exhibit characteristic analogous actions on the uterus. In our experiments they have exercised this characteristic action on the excised organ, so that their action cannot, as is suggested by Dale and Laidlaw,[3] be due to their action on the adrenal gland, increasing or decreasing its characteristic secretion. Pilocarpine increases the rate and strength of the contractions when these are present, or causes them to appear if not already visible. Cushny[4] states that the characteristic effect of pilocarpine varies with the physiological state of the organ, and parallels that of hypogastric stimulation. Pilocarpine nearly always causes an increase in the tone of the uterus, and this effect is promptly neutralized by atropine.

The uterine nerves are undoubtedly connected with a centre in the lumbar region of the cord, and through it with the cerebrum. As is well known, emotions often markedly affect the uterine movements. The action of morphine and anæsthetics, when used to decrease the uterine movements, probably produce their effects through these centres. Drastic purgatives, and other irritants to the intestinal canal, probably produce their effects on the uterus reflexly through the lumbar centre, owing to the congestion that they set up. Langley and Anderson noted that, in animals with a bicornuate uterus, a stimulus applied to one horn not infrequently led to a contraction in the horn of the opposite side.

From the standpoint of therapeutics there are two properties of uterine muscle which are of fundamental importance, tone and contractility. When drugs are given for their action on the uterus, the desire is to increase or decrease either one or both of these properties. Tone may best be defined as that state of partial contraction in which a muscle normally is, and depends, in the case of unstriped muscle, probably upon its chemical state. At all events, we know that the action of certain drugs which act upon it do change its length, and also the ease with which it can be stretched. After the uterine muscle has completed a contraction, the pressure of the contents within it is the important factor in causing the muscle to regain its original length; the greater this pressure the greater and quicker the relaxation. But the extent to which such a relaxation takes place, whether the pressure can, in other words, cause it to regain or surpass its previous length, depends upon the tone of the muscle. When the tone is low it is easy for the pressure to cause it to regain the length it had before the contraction began, or, if the tone has decreased, the same pressure will tend to stretch the muscle to an even greater extent. But with increase in tone a greater pressure than before will be needed to bring it to its original length. After the expulsion of the fœtus the uterus should contract firmly, and its tone should rapidly increase, and, as the pressure within should be slight, but slight relaxation should occur. If, however, the tone be poor, the slight pressure exerted by the blood oozing from the placental site will be sufficient to bring about relaxation, and each step in relaxation will lead to increase in hæmorrhage.

The object in giving drugs before labour is complete, must be to increase the tone, so that the uterine wall remains closely applied to the child in its passage through the pelvis, and, at the same time, to increase the force and frequency of the uterine movements, so that the bag of waters may be firmly forced down on the os and bring about its dilatation. In the bicornuate uterus of animals the increase in tone becomes of even greater importance, as it tends to keep the walls of the tube closely applied to the fœtus and prevents it kinking under the pressure of the abdominal muscles. After the delivery of the membranes and placenta, increase in tone becomes the most important requisite, in order to keep the walls of the cavity as closely applied as possible to each other.

In labour the dilatation of the neck is due to its passive relaxation, owing to the force exerted by the rhythmical contractions and the increase in tone of the upper part of the uterus pressing the bag of membranes upon it. Polaillon showed that when the area of the orifice is 1 sq. cm. the pressure on the membranes was 110 grammes, when completely dilated it was 95 sq. cm. and the pressure forcing the head down was estimated at about 10 kilogrammes (roughly 22 lbs.) at each contraction. Mathew Duncan has estimated that the pressure necessary to cause rupture of the amnion, varies between 1·8 and 17 kilogrammes—4 to 37 lbs.

Schatz,[5] Polaillon[6] and Westermark[7] have found that the constant tonic pressure exerted upon the uterine contents during delivery in any individual case, remains constant as long as no change takes place in the volume of the contents, but varies, in different cases, from 20 mm. to 70 mm. of mercury in different individuals—a variation of from 6 to 21 oz. per sq. in. The average, constant, uterine pressure is thus about 35 mm. of mercury per sq. cm., or about 10·5 oz. per sq. in. Polaillon finds that the whole pressure exerted upon the surface of the ovum—1400 sq. cm. or 200 sq. in.—is about 66 kilogrammes—145 lbs. During a uterine contraction, there is an additional average pressure of 46 mm. mercury per sq. cm.—13·8 oz. per sq. in.—or 88 kilogrammes—193 lbs.—on the whole surface of the ovum. The total pressure during a contraction, therefore, will be 154 kilogrammes, or 338 lbs., or an estimated work equivalent to raising nearly 22 lbs. to the height of one yard,—9 kilogrammemeters. Out of five hundred and eighty-seven estimations by Westermark[7] on women at the period of delivery, the lowest pressure on the uterine contents noted was 20 mm., the highest 220 mm. These pressure values were, of course, greatly increased when the abdominal muscles and diaphragm took part in the pain. In this case, during the expulsive period, values averaging 400 mm., or four times that of the uterus alone, were brought into play. One cannot hope by the use of uterine drugs to change this, the greatest expulsive force.

The tracings shown have been taken by two methods, either the contractions of the muscles alone have been recorded by means of a lever system, or the intra-uterine pressure has been recorded as well by means of a rubber bag inserted into one of the fœtal sacs. The animals, of course, were rendered completely unconscious previous to any operation being undertaken. In all cases, a rise in the curve shows an increase in contraction, a fall, relaxation. For example, in Tracing 1 there are shown three contractions previous to the injection of ergotoxine, subsequently there are very many. That they succeed one another more rapidly is evident; it is also apparent that the general level of the curve has risen; there has been an increase in tone which only gradually falls to its original level.

The drugs, whose action is supposed to be on sacral endings, such as pilocarpine, atropine, and physostigmine, play little part in therapeutics. The drugs, whose action is upon the sympathetic, hypogastric endings, are of great importance.

Adrenalin is pharmacologically, though not therapeutically, one of the most important of this group. Although in cats it often causes a relaxation of the non-pregnant uterus, it always causes contraction in the pregnant animal; clinical experience seems to bear this out for man. Tracing 2 shows a typical adrenalin effect. It will be noted that the uterine contraction, though very marked, is of very brief duration, and is accompanied by no rise in tone. Indeed, in our experiments, a subsequent decrease in tone has been very common.

Ergot also acts on these sympathetic endings. The activity of ergot in its ordinary pharmaceutical preparations shows such marked variability,[8] that it is fortunate that during the last few years we have had isolated for us its active principles. Probably the most important is the water soluble principle para-hydroxy-phenylethylamine,—sold under the trade name of tyramine. The action of this body is indicated in Tracing 3, which shows a marked increase in rate and strength of uterine contraction, and also a marked rise in tone; a highly desirable result. This body, which was first studied by Barger and Dale,[9] seems to promise to become of some importance. The earlier isolated principle, the amorphous alkaloid, ergotoxine, also gives very marked results, consisting, in general, in both increase in contractility and a rise in tone. Tracing 4 is a fairly typical example. Large doses of this substance produce, however, a depression of the nerve endings, which in smaller doses it stimulates, and this makes it inadvisable to use it in repeated doses.

Pituitary extract acts also on these same endings, and in our experiments has almost invariably given us both a marked rise in tone and also an increase in the rhythmic movements. Tracing 5 is characteristic.

With these last three drugs we have always been able to produce some pharmacological effect, but have encountered the difficulty that we have not always been able to produce any given type of result. Before the birth of the child it is important for the clinician to bring about not only increase in contractility, but also some rise in tone, though the first is the more important in most cases; that is to say, to produce an effect similar to that shown in Tracing 1, and not merely a rise in tone such as is shown in Tracing 5. Post-partum, a rise in tone is much the more important, and Tracing 5 would illustrate a successful result. Unfortunately we are not able to foretell which result will be obtained from any given dose, and in consequence we consider those clinicians who refuse to use them before birth justified, though doubtless they may be of value in this stage. Post-partum, they are, we believe, of undoubted value.

Our experiments with hydrastine have yielded less certain results than we have been able to obtain with the ergot preparations, or with pituitary. Quinine, the sovereign remedy in malaria, has been known to cause abortion, and not a few Italian physicians have recommended its use in obstetrics. Cushny[1] found in his experiments that small injections in animals usually produced a short series of contractions, but no increase in tone. He also adduced some evidence to show that its action is upon the muscle itself.

In our experiments, also, we have only seen increase in rate and strength of the contractions, and practically no effect on tone. The increase has in no case been very striking. Tracing 6 is a very typical one. In this tracing the upper line represents intra-uterine pressure, the large waves the change in length of longitudinal muscle.

Barium also acts on the uterine musculature directly. Its effect is chiefly on tone, the rhythmic movements being little effected by small doses, but being entirely obscured with large ones, owing to the very marked rise in tone.

We have practically no knowledge of drugs which are capable of decreasing uterine tone or contractility. In some of our experiments we have been able, apparently, to do this by the use of nitrites, in others we have been completely unsuccessful. The increase in tone brought about by pilocarpine can be relieved by atropine, and it is possible that this drug might be of service in some cases of dysmenorrhœa, when the pains are dull and persistent.

The central control, however, of the organ must not be forgotten. Alcohol seems to be completely without effect, even when given intravenously. Anæsthetics cause, undoubtedly, a relaxation and slowing, or even arrest, of uterine movements in some cases. The direct effect on the uterus seems to be slight, but their effect on the movements of abdominal muscles is often very marked. According to Kehrer,[10] morphine in small doses increases the uterine movements, while in very large doses they are somewhat depressed. It must not be forgotten that the absence of pain brought about by the exhibition of this drug, enables the patient to participate in the necessary abdominal movements with much greater success.

References:—

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2. Langley and Anderson; *ibid*, 19, 1895, p. 122.
3. Dale and Laidlaw; *ibid*, 44, 1912, p. 12.
4. Cushny, *ibid*, 41, 1910, p. 233.
5. Schatz, *Arch. f. Gynæc.*, 3, 1872, p. 58.
6. Polaillon, *Arch. de Physiol.* 7, 1880, p. 1.
7. Westermark, *Scand. Arch. f. Physiol.* 4, 1893, p. 331.
8. Cronyn and Henderson, *Jour. of Pharm. and Exp. Ther.*, 1, 1909, p. 203.
9. Barger and Dale, *Jour. of Physiol.*, 41, 1910, p. 19.
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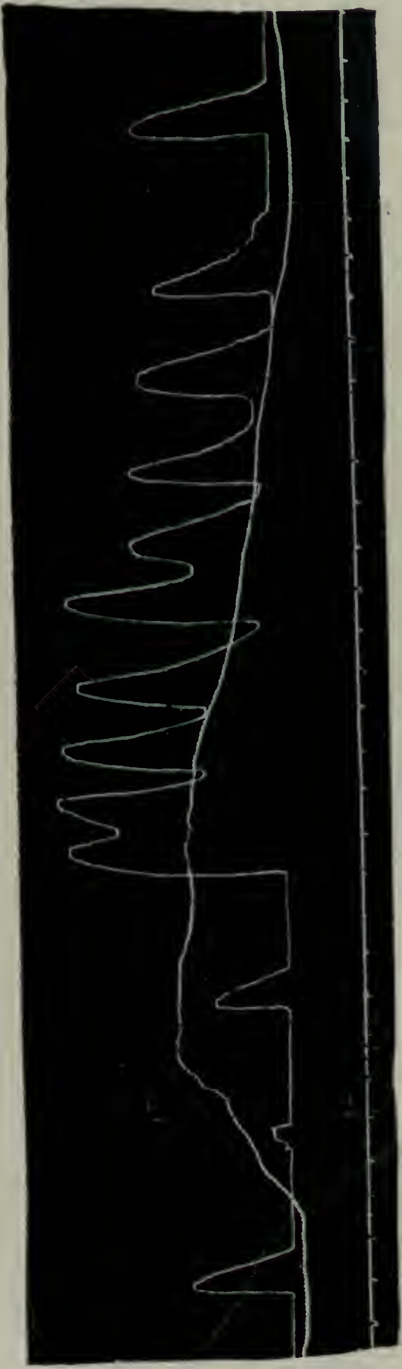
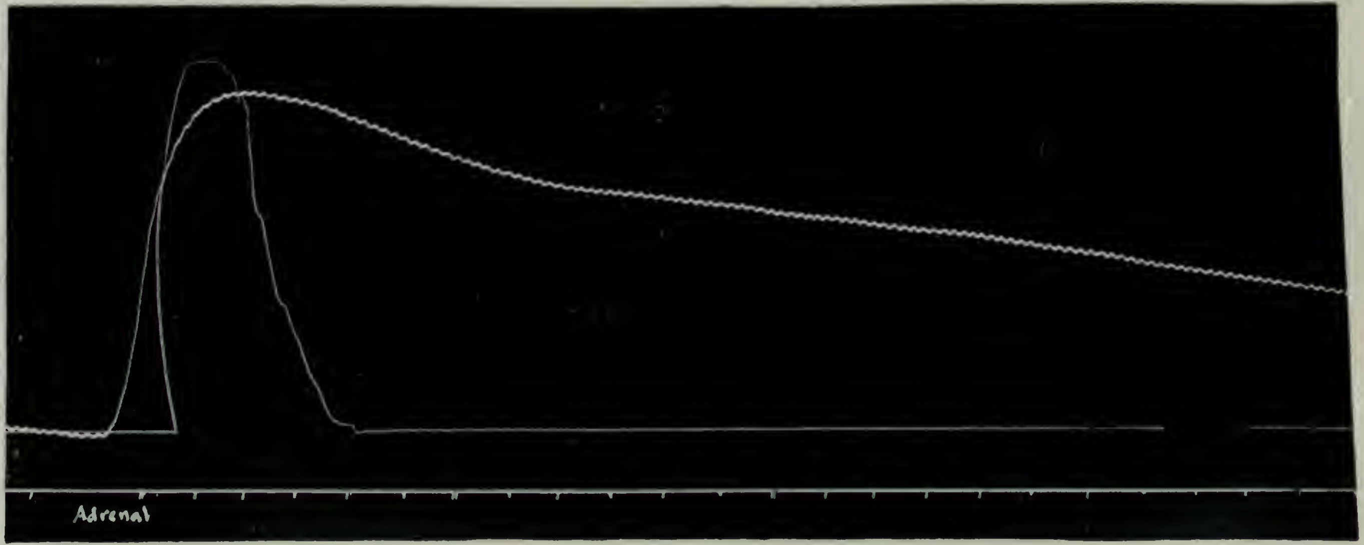
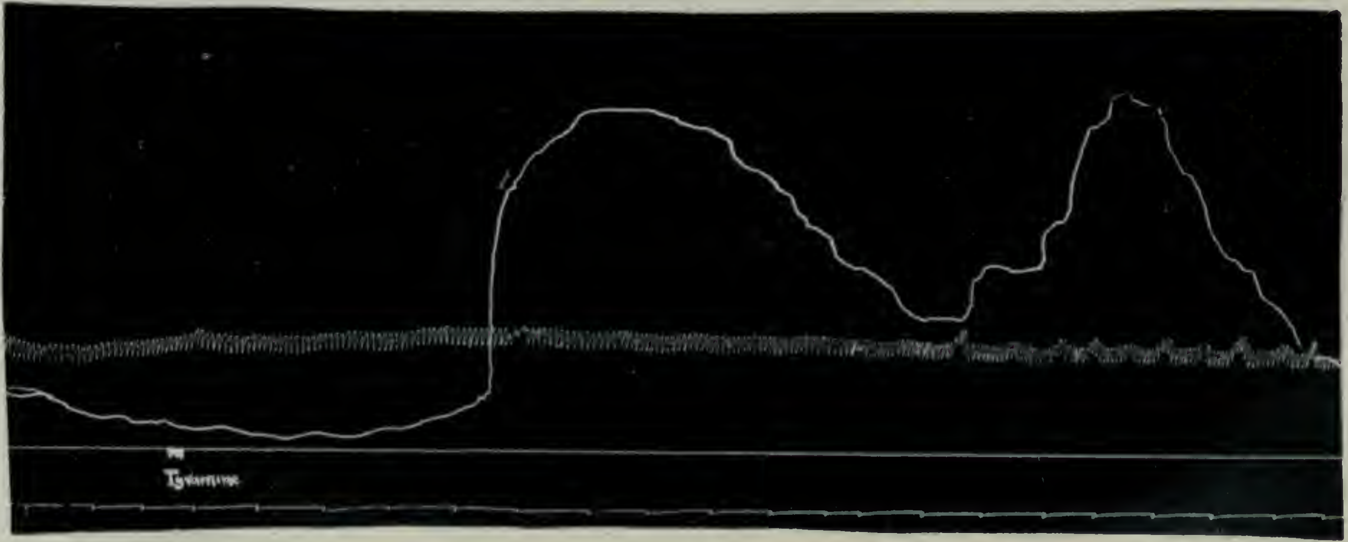


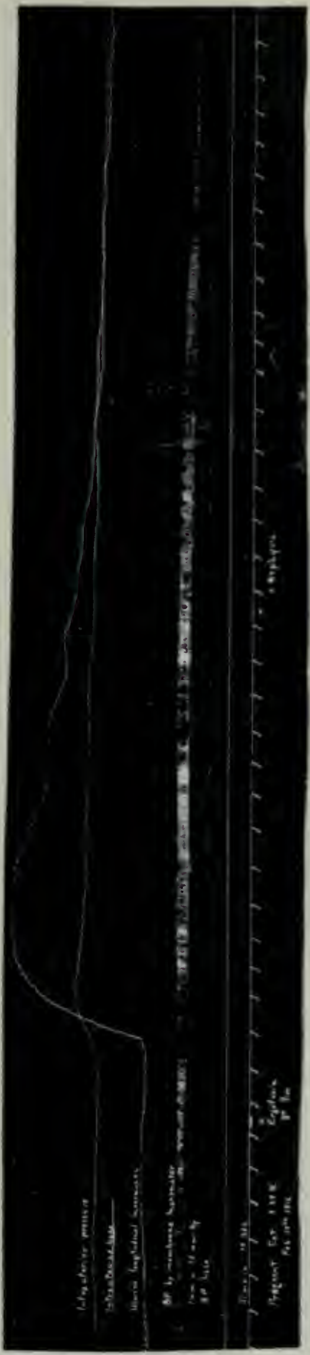
Tracing 1.—Cat, pregnant, near full term. Ergotoxine, 1·3 mg., intravenously showing uterine contractions, blood pressure, and time intervals of 10 sec. Illustrating Dr. Sharpe's article· "The Action of Drugs on the Uterus."



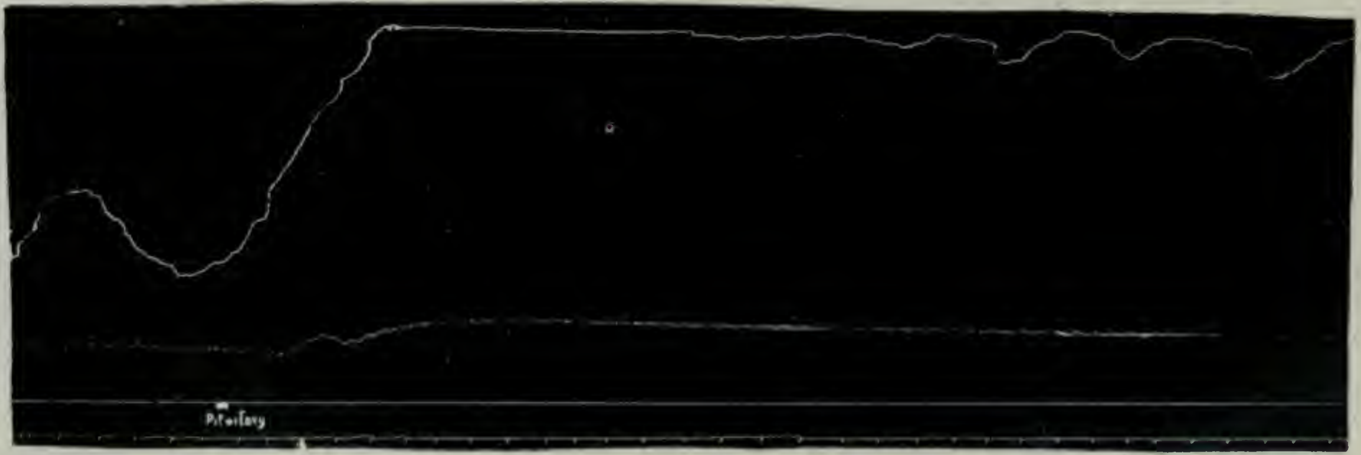
Tracing 2.—Cat, intracerebral magnesium chloride, in shock, blood pressure 35 mm.Hg. 0·5 cc. 1-1000 adrenalin. Note single uterine contraction and slow fall of pressure. Illustrating Dr. Sharpe's article: "The Action of Drugs on the Uterus."



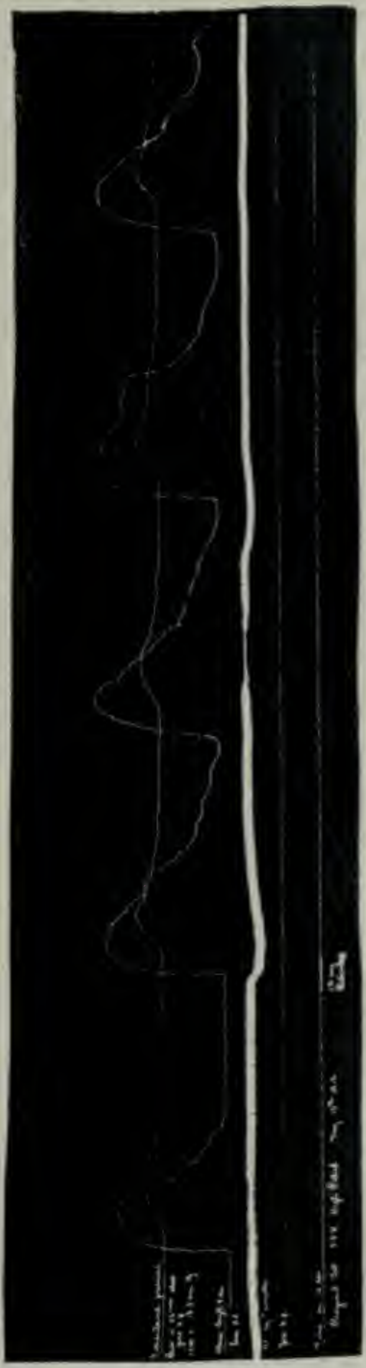
TRACING 3.—Pregnant Cat, Uterine Contractions. Tyramine, 5 mg. Illustrating Dr. Sharpe's article: "The Action of Drugs on the Uterus."



TRACING 4.—Illustrating Dr. Sharpe's article: "The Action of Drugs on the Uterus."



TRACING 5.—Pregnant Cat, Uterine and Blood Pressure Tracings. Pituitary Extract. Illustrating Dr. Sharpe's article: "The Action of Drugs on the Uterus."



TRACING 6.—Pregnant Cat. Quinine, 10 mg. Illustrating Dr. Sharpe's article: "The Action of Drugs on the Uterus."

A REPORT OF TWO CASES OF TYPHOID FEVER WHICH SHOW UNCOMMON LESIONS DUE TO THE BACILLUS TYPHOSUS

1. ACUTE PURULENT PERICARDITIS

2. ACUTE HÆMORRHAGIC PLEURITIS

By M. W. A. McNaughton, M.D., and Lawrence J. Rhea, M.D.

From the Pathological Laboratory of the Montreal General Hospital

THE comparative rarity of acute lesions of the pericardium and pleuræ due to bacillus typhosus warrants the publication of the two following cases:

Acute pericarditis due to bacillus typhosus. Clinical history: The patient, a male, twenty-one years old, entered the Montreal General Hospital, November 1st, 1910, in the service of Dr. F. G. Finley, complaining of pain and swelling in both knees and ankles, and sore throat.

Personal history. Nine years ago he had influenza. Otherwise, he has always been in good health.

History of present illness. On October 1st, 1910, he had severe pains in his head and body, which continued for two days. His condition improved and he returned to work on October 8th, 1910. On October 22nd, pain developed in his legs and feet. This was of sufficient severity to confine him to bed, where he remained until admission, November 1st, 1910.

Condition on admission. Face is pale, skin dry, tongue coated, teeth in poor condition, and breath is foul. The left epitrochlear and the lymph nodes in both axillæ are palpable. Respiratory system is normal. There is a suggestive "water hammer" pulse. Heart shows some hypertrophy and there is a reduplication of the second pulmonary sound. There is a systolic and very soft diastolic murmur at the base of the heart. Over the apical region, the systolic murmur alone is heard. The spleen is not palpable. Both knees and both ankles are swollen, hot and tender. From the date of admission, November 1st, 1910, until February 23rd, 1911, a period of three and one half months, his chief signs and symptoms were those found in acute rheumatic fever. The chief signs and symptoms were swelling and tenderness of the ankles, knees, and finger joints, præcordial pain of varying intensity and of an intermittent character, and the heart murmurs referred to above were always present. At irregular intervals there was profuse perspiration. The temperature varied between 102° ten days after admission, and 97°. Nearly every day it rose to 99°.

On February 22nd, 1911, his throat became sore and continued so until February 28th. On February 23rd there was an abrupt rise of temperature reaching 103·4°. This was accompanied by chilly sensations and profuse perspiration. The temperature returned to normal in the course of two hours. The following day his temperature rose to 102°; this returned to normal, and his temperature chart showed the previous daily rise to 99° till March 13th, when it rose to 100°. On March 14th it was 100°, then fell to 98°. On March 15th he complained of anorexia, headache, increase of the præcordial pain and the temperature rose to 101°. It did not return to normal, but continued to rise by steps, and remained between 104·4° and 100°—the greater part of the time it was above 103°.

From March 15th, the day on which the last named signs and symptoms appeared, the chief characteristics of his condition were:—occasional sweats, vomiting, collapsing pulse, capillary pulsation, gallop rhythm, diarrhœa, enlarged spleen, rose spots, delirium, and abdominal pain. A positive Widal was obtained March 21st.

On March 22nd his white blood corpuscles were 4,200 per c. mm. On the afternoon of his death, April 13th, 1911, twenty-eight days after the onset of typhoid fever, the following note was made: "The patient has been somewhat cyanosed, pulse small and feeble; there is incontinence of fæces; the abdomen is flat and retracted. There is no capillary pulsation, the cardiac impulse is weaker; the heart sounds are distant, and no murmurs are heard; the lungs are clear. A blood count showed the white cells to be 21,000 per c.mm."

Post-mortem examination. M.G.H. A-11—45, April 14th, 1911 (Dr. McNaughton). Body is that of a fairly well developed, poorly nourished, adult white male.

Peritoneal cavity. Peritoneum is smooth, moist, and glistening. Mesenteric lymph nodes are enlarged, softened, and average 1 cm. in diameter. Near the cæcum, there are two lymph nodes, which measure 1·5 cm. in diameter. These are soft, and contain in their central portion yellowish purulent material.

Pleural cavity. Right pleuræ are smooth, moist, and glistening.

In the left pleural cavity there are a few fibrinous adhesions over the lateral surface of the upper lobe.

Pericardial cavity: The parietal layer of the pericardium is thickened and firmer than normal. On opening the cavity, there is a small amount of thick, yellowish, turbid material. Over the anterior surface of the right ventricle, the two layers of the pericardium are united by firm, fibrous adhesions.

Heart: Weight, 510 gms. Numerous small fibrous tags are adherent to the anterior surface of the right ventricle. The myocardium is firm and dark red in colour. The endocardium is smooth and glistening. The measurements of the heart valves are: T.V., 12; P.V., 8; M.V., 12; A.V., 7; L.V., 1·3; R.V., 0·4.

Lungs: The right lung is somewhat collapsed, slightly crepitant throughout, and bluish red in colour. No areas of consolidation are demonstrable.

Left lung: The pleura over the lateral surface of the upper lobe is dull and has a few fine tags adherent to it. The left lung is crepitant except in the upper lobe, where there is an area 6×3 cm., which is firm. On section the surface of the lung is bright red in colour, except the firm area referred to above, which is dark red. The cut surface here is dry and sections sink in water.

Spleen: Weight, 360 gms. The capsule is smooth, the edges are round. On section the surface is dark red in colour and very soft. An excess of pulp adheres to the knife on scraping. Anatomical markings are only fairly well defined.

Gastro-intestinal tract: The blood vessels of the intestines are somewhat injected, particularly in the last metre of the ileum and the cæcum. On the peritoneal surface of the ileum, 2 cm. from the ileo-cæcal valve, there is an elevated, greyish area 2 cm. in diameter. Peyer's patches are hypertrophied and injected. In the lower portion of the ileum they contain small ulcerations extending down to the muscularis. One, 2 cm. from the ileo-cæcal valve, is 1 cm. in diameter, and is situated to one side of the greyish, elevated area on the peritoneal surface described above. In the cæcum, the lymph follicles are very much hypertrophied. The mucous surface is injected. At one border of the appendicular orifice, there is an ulceration 0·8 cm. in diameter extending down to the muscularis. In the large intestine the lymph follicles are hypertrophied.

Liver: Weight, 2,130 gms. Is dark red in colour. On section the surface is dark red. Scattered throughout the organ there are a few pale grayish, sharply outlined areas 2×3 mm. in diameter.

Kidneys: Weight, 390 gms. Capsule strips easily leaving a smooth surface. The pyramids are sharply differentiated from the cortex, which is 1 cm. in thickness and dark red in colour.

Anatomical diagnosis. Acute ulcerative enteritis (typhoid); acute pleurisy; acute localized peritonitis; focal necrosis of the liver; bronchopneumonia; hypertrophy of the heart; acute and chronic pericarditis; hypertrophy of the spleen and mesenteric lymph nodes; acute suppurative lymph adenitis (mesenteric).

On March 20th, 1911, a blood culture was taken. This was sterile. Cultures from the exudate in the pericardium and from the suppurating mesenteric lymph nodes gave a pure culture of bacillus typhosus.

Remarks. Pathological lesions of the pericardium due to bacillus typhosus are rare.

Horton Smith Hartley, in two hundred and ninety post mortem examinations on patients who had died with typhoid fever, found acute pericarditis occurring in 0·68 per cent. He gives no bacteriological report, and one cannot be sure whether or not these lesions were due to the bacillus typhosus or to some other organism.

In Osler's[1] statistics of fifteen hundred cases of typhoid fever, acute pericarditis occurred in three cases, or two per cent., with one death. In the case that died the bacillus typhosus was isolated in pure culture from the pericardial cavity.

According to a French report by Menard and Brodin,[2] there are two types of acute pericarditis occurring in typhoid fever, (1) the dry type; (2) the purulent type. Of these, the purulent type is less common, more severe, and occurs most commonly in young subjects —no bacteriological reports are given in this paper. For this reason the number of the acute pericardial lesions due to the bacillus typhosus cannot be determined.

Pericarditis during the course of fever may be due to organisms other than the bacillus typhosus; and unless this organism is recovered from the pericardial lesion, the lesion cannot with certainty be attributed to it.

The previous history of this case may have some bearing upon the development of the acute lesion found in the pericardium. During the attack of rheumatic fever, which began five months previous to the onset of typhoid fever, he complained of præcordial pain, and probably had at this time some acute pericardial lesion. This supposition is borne out by the autopsy findings. Besides the acute exudate on the pericardium, its two layers were firmly united in places by old adhesions. In this case the previous lesion of the pericardium may have predisposed it to the development of the acute condition found at autopsy.

The acute suppurative condition of the mesenteric lymph nodes in this case is of some clinical importance. We have made an autopsy on a case of acute peritonitis developing in the course of typhoid fever, secondary to the rupture of a suppurative mesenteric lymph node. In this case none of the intestinal ulcers had perforated, and from the peritoneal exudate and the suppurating lymph node a pure culture of bacillus typhosus was recovered.

Case 2. Acute hæmorrhagic pleurisy, due to bacillus typhosus. F. G. B., male, twenty-seven years of age, was admitted to the service of Dr. Molson, on October 3rd, 1910, complaining of sore throat, cough, and loss of appetite. He developed rose spots, and a positive Widal, and ran a typical course of typhoid fever. There were no signs or symptoms suggesting lung involvement aside from a slight cough and a few moist râles.

Pathological report. Extract of autopsy, M. G. H. A—10—181 (Dr. Waugh). Body is that of a poorly developed, poorly nourished, white male adult. The peritoneum is moist and smooth. Mesenteric lymph nodes are larger and somewhat softer than normal. The heart weighs 225 gms. It shows no pathological changes.

Pleural cavity. The right pleural cavity is normal. The left contains 375 c.c. of bright red fluid. The pleuræ on this side are bright red, in places covered by a fibrinous exudate, and the blood vessels are deeply injected.

Lungs. Irregularly distributed throughout both lungs there are a number of raised, dark red, firm areas, which vary from 3 to 5 mm. in diameter. At the lower anterior margin of the lower left lobe, there is a wedge-shaped, elevated, dark red, very firm area, which extends into the underlying lung tissue. About the periphery of this area, there is a narrow, bright red zone.

Spleen. Weight, 200 gms. It is moderately firm.

Gastro-intestinal tract. The last metre of the small intestines shows several longitudinal ulcerated areas, which are situated opposite the mesenteric attachment.

Liver. Weight, 1,925 gms. On section it shows a mottled appearance, due to small red areas separated by inter-communicating, narrow, yellowish lines. Gall bladder is normal.

Kidneys. Weight, 315 gms. On section they are pale and the cortices extend slightly beyond the incised capsule.

Anatomical Diagnosis. Acute ulcerative enteritis (typhoid); hypertrophy of spleen and mesenteric lymph nodes; acute hæmorrhagic pleuritis (left); infarct of lung (left); bronchopneumonia (bilateral); cloudy swelling of kidneys.

Bacteriological report. Cultures taken at the post mortem from the hæmorrhagic fluid in the left pleural cavity and the heart's blood, showed a pure culture of bacillus typhosus, which was agglutinated by the serum of a known case of typhoid in one hour in 1 in 40 and 1 in 80 dilutions.

Remarks. All writers agree as to the rarity of pleurisy in typhoid fever. In four hundred and ninety-two autopsies on typhoid fever made in the Middlesex Hospital, acute pleurisy was found in 0·813 per cent., and pleural effusion in 0·406 per cent. There are, in this paper, references to cases in which pleurisy has developed in the course of typhoid complicated by pneumonia, but no bacteriological reports are given. Hawkins[3] found no case that recovered, but he reports one case of typhoid complicated by acute pneumonia, acute pericarditis, acute endocarditis, and hæmorrhagic pleural effusion with recovery, but unfortunately he gives no bacteriological report. Horton Smith Hartley found no case in the St. Bartholomew Hospital records, covering a period of thirty years.

The organisms isolated from the pericardial cavity and the pleural cavity of the two cases reported above were identified by their staining properties and cultural changes in the ordinary laboratory mediums, as well as the various sugars.

References:—

1. Osler's "System of Medicine."
2. Menard and Brodin. "Le Cœur dans la Fièvre Typhcïde." *Gazette des Hopitaux*, No. 75, July 2nd, 1910, p. 1083.
3. Francis Hawkins. "Case of Typhoid Fever." *Transactions of the Clinical Society of London*, 1907, Vol. xl, p. 72.

During the first six months of the present year, over two hundred carcases of animals and over three thousand pounds of portions of such carcases, which had been slaughtered and were to be sold for food, were condemned and confiscated by the Toronto medical health officer. Large quantities of fruit and vegetables were also condemned.

THE PRESIDENT'S ADDRESS AT THE ANNUAL MEETING OF THE ASSOCIATION

Mr. Chairman and Members of the Association:

IF, in rising to address this national association as its president for the year, I confess to some small feeling of pride, I have little doubt you will forgive me for it. It is a feeling born, and legitimately born, of a deep sense of the honour you have laid upon me; and I trust you will accept the assurance of my heartfelt thanks.

Yet, deeply as I have appreciated the honour, I have felt the responsibilities of the office in an equal, or even a greater, degree. At times during the past year, let it be confessed, the work and worries incident to preparing for this meeting have almost made me regret my election. We all owe a debt of gratitude to the medical men in Edmonton and the city authorities for the arduous work they have done and the excellent help they have rendered.

Gentlemen, I do not propose in this presidential address to take up any one aspect of medicine in particular, as is done in many addresses of this character; nor to give a general review of the progress of medicine during the past year, with which many of you are better acquainted than I am. What I have set before myself is rather to review briefly the work of the association in the past two or three years; to point out the lines along which progress has been made, and along which, as I take it, progress has still to be made; to estimate what part in it all the West has taken and may take, and, finally, to make an appeal for greater unity in thought and in aim among the profession in Canada for the advancement of this Association. If what I have to say shall render even the slightest service to the cause of the association, and through it to the cause of medicine in Canada, I shall feel myself amply repaid.

The selection of Edmonton for the place of meeting of the association this year is significant. It marks the awakening of the East to the fact that this Western part of the middle West has come to man's estate, and is showing the lustiness of youth. We of Alberta who have grown up, so to speak, with the province, have been ourselves amazed at the strength and rapidity of her growth. But the East had not really recognized the fact. The Easterner knew much of Vancouver and Winnipeg, but little of Calgary and Edmonton. Your selection of Edmonton, therefore, came as a welcome surprise. When it was first suggested, we immediately set our hearts on it. We desired greatly to give you a taste of Western hospitality, and we desired also that you should see us and observe how well we were getting on. Perhaps there is in us some such spirit as that of the boy who insists on his father measuring his height against the door every month.

However all this may be, you are eventually here, and in the name of Edmonton, and of Alberta, I bid you heartily welcome.

This is only the second time that the association has held its annual meeting in Alberta. In 1889 it met at Banff, and there were only eighty-two present.

Only two meetings in the history of the association have been held in the West previous to the present one. Of these, one, as I have said, was held at Banff, twenty-three years ago, in the year 1889. The president was Dr. H. H. Wright, of Ottawa, and the general secretary was Dr. James Bell, of Montreal, both of whom have since died. The vice-president for the North West Territory at that time was Dr. R. G. Brett, of Banff, who is so widely and favourably known throughout the West. The second of these meetings was held in Vancouver in August, 1904. The president was Dr. Tunstall, of Vancouver, and the secretary Dr. George Elliott, of Toronto. Dr. Elliott's annual report gave certain statistics of attendance which are interesting. He said that during the first decade after the organization of the association in 1867, there was an average attendance of seventy-one. In the second decade, from 1877 to 1887, there was an average attendance of 74·8; during the third decade, 107·5; while for the previous seven years, that is from 1897 to 1904, the average attendance was 139·1. In the light of these figures it is interesting to note that the average attendance for the past seven years has been 320, while if we count only the last three meetings since the inauguration of the JOURNAL it is 400.

In reading over the minutes of the Vancouver meeting, I came across two resolutions of interest to us. One concerned the question of a Public Health Department for the whole country, the other that of Dominion Registration.

At the Vancouver meeting in 1904, a strong resolution was passed, urging the Dominion Government to establish a department of public health under a minister of the crown; a matter which the association had been urging for three years. Unfortunately, this resolution, as well as others of a like purport, remained without effect. But I am happy to be able to say that matters in this direction now look more favourable. At the first meeting of the Canadian Public Health Association, held last December in Montreal, under the presidency of Professor Starkey, Premier Borden promised that his government would institute a general reform in public health matters, and put that department on a sound and modern footing. In this he was supported by the Hon. Martin Burrell, Minister of Agriculture. We can thus hope that, before long, this very important question will be settled in the manner that this association has been urging for so long.

At the same meeting there was passed a resolution concerning Dominion Registration to which Dr. Roddick, of Montreal, had given so much of his time. This, too, has now come to pass, but only this year. During the present spring the so-called "Enabling Clause" was finally passed by Ontario, the last of the provinces which had previously been afraid that their provincial autonomy would be endangered; and I am glad to be able to say that we are finally in a position to begin the detail work of arranging for a Dominion Council.

The Roddick Bill aims at the establishing of one set of examinations and one standard of qualifications for the practice of medicine in Canada, in place of the different examinations and varying standards of the individual provinces. It was introduced in the House of Commons in 1902 by Dr. Roddick, then representing St. Antoine Division, Montreal. The bill was passed, but owing to objections raised to certain features by provinces jealous as to their existing rights, it was found impossible to give effect to the act.

About two years ago a meeting of the representatives of the provincial medical councils was held in Montreal, when Dr. Roddick succeeded in securing the consent of all to certain amendments which he proposed to the original act. These amendments, removing earlier objections, were embodied in a bill which was passed at the 1911 session of the Parliament in Ottawa. It is part of the act as it now stands that the provinces give their assent to the principle of the act through a bill passed in their own legislatures, and it is this step which has now been taken by all the provinces.

When the Dominion Medical Council is finally formed it will be possible for a physician, having passed the examinations prescribed by it, to practise in any province of Canada, instead of, as at present, only in the province or provinces where he has satisfied the requirements of the respective provincial medical councils. The Dominion Medical Council will have full authority over the purely professional subjects, while the provinces will probably exercise authority over the non-professional subjects of the examinations.

I have no doubt that I voice the sentiments of all of you here present, and indeed of the whole profession in Canada, when I say that we all owe a profound debt of gratitude to Dr. Roddick, who has been the direct means, and in a sense the only means, by which this beneficent law has been placed on the statute-books. We realize what a vast amount of time and energy he has expended on this work; how, indeed, he has given many of the best years of his life to it. And in thanking him we desire to record, not alone our appreciation of the work he has done, but also of the sacrifice it has cost him. If it is, in his eyes, any reward that the profession throughout the country feels grateful to him for his work; if it is to him any gratification that the whole of Canada has learned to call this bill the "Roddick Bill"; if it is any pleasure to him to realize that every member of the profession, thinking of this task which he has accomplished, looks up to him with respect largely mixed with affection, let him be assured that all this is true. It is an achievement which perhaps no other medical man in Canada could have brought to pass. The task of reconciling so many diverse and even warring interests in the various provinces of the Dominion; of overcoming prejudice, and of bringing together those of dissimilar views, was only to be accomplished by a man whose professional reputation was high from East to West, and whose tact had become almost proverbial from East to West. People not only gave him affection; they gave him respect. It was the combination of qualities of head and heart in him which finally brought this great matter to a successful conclusion. One of the chief privileges of my office this year lies in the opportunity which it affords me of thus giving public expression, on behalf of the association, to the gratitude which we all feel towards Dr. Roddick.

I have thought that this meeting would be interested in a short review of the recent work of the association. The association, it is true, has been in the last ten years steadily increasing in numbers, but the increase up to a recent period has been slow. The establishment of the JOURNAL two years ago gave an enormous impetus to its growth. With the inception of the JOURNAL, the conditions of membership were radically changed. In former years a member paid $2.00 annual subscription, and paid it only when he attended the annual meetings. It is perfectly clear that with an annual attendance varying from one to three hundred, the amount of money in the treasury was rarely sufficient to do more than pay the ordinary expenses of the secretary's office, together with the expenses incident to the annual meeting. The activities of the association along general lines were extremely hampered. Without an official organ and without money, there was very little that could be efficiently done. Now we have changed all that. Thanks to the labours of the Finance Committee of the past two years, we have established an efficient journal of the association, which, under the able editorship of Dr. Andrew Macphail, has already won a place for itself in the periodical literature of the medical world. We have hopes that within a short time we shall be able to make it a weekly instead of a monthly. That will, however, depend upon the support given the association by the profession at large throughout the country. In the second place, the establishment of the JOURNAL enabled the association to raise the membership fee to a reasonable amount, and to make membership in the association and the payment of the annual dues a permanent matter. I am instructed by the secretary and by the treasurer to say that this does not mean that the association has grown suddenly rich. In spite of the increased income, the necessary expenses connected with the publication of the JOURNAL have eaten up nearly all the revenue. But the profession now has an organ to represent it in Canada; and while it is yet too soon to expect that it can give adequate representation to all the branches of the profession, and though it must naturally fall short as yet of the standard which many of you hope for it, it has nevertheless done extraordinary good work, and is a journal of which we all feel proud.

During the last two years a second big piece of work has been carried on by your officers. I refer to the affiliation of the various Provincial Associations with the Canadian Medical Association. At present all of the provinces save one have declared themselves in favour of affiliation, and have become affiliated. I am convinced that this work will be of the greatest benefit to the profession in Canada.

I pass now to a brief consideration of the needs of the future. Along what lines are advances to be made? To begin with, there is one matter, gentlemen, which I think is of paramount importance to this Association, and it is this: the consolidation of the profession in Canada into one strong and united body. That task can be accomplished by no other means than by this national association. We have already done something towards this end. No longer than three years ago, we were a very haphazard body. The membership was constituted, for all practical purposes, only by those who came to the annual meeting—from three hundred to four hundred men. And these, of course, varied enormously from year to year, according to the part of the country in which the meeting happened to be held. With this state of affairs, there was no possibility of concerted action. A great step forward was made in the establishment of the JOURNAL of the Association, and in making membership continuous, and the payment of the fee an annual necessity for continued membership. The establishment of the JOURNAL involved, as I happen to know, a very great amount of labour on the part of the Finance Committee, and the thanks of the association are due to the members of the Finance Committee for the last three years, as well as to its able and self-sacrificing editor, Dr. Andrew Macphail. The JOURNAL has had a very excellent start. It had to be begun as a monthly, but we look forward to its becoming, before long, a weekly. Canada can afford plenty of good material for a weekly, if material were all that was needed. But, unfortunately, journals cannot live on material alone. The financial burden of the undertaking is very great; and the Finance Committee assures me that unless the membership roll of the Association increases very considerably, it will be impossible to stand the expenses of a weekly. When we consider that the JOURNAL, as the organ of the Canadian Medical Association, is the one great bond which alone can unite the profession from East to West, we cannot fail to realize the great importance of loyal adherence to the Association. It means so much to the profession in Canada as a whole, and to each individual man, that there should exist a strong central body, like the Canadian Medical Association, to look after their interests, that I cannot conceive how any medical man should remain out of it.

This, then, is the great problem—to get the Canadian Medical Association solidly cemented together. How is it to be done? To my mind, it is to be done by an extension of the principle of affiliation. Two years ago the only province that had declared itself in favour of affiliation with the Canadian Medical Association, and that became affiliated, was Ontario. In the last two years all but one of the provinces have followed Ontario's lead, and the one exception has declared itself unofficially in favour of affiliation at an early date. This is the necessary beginning. But what we have yet to do towards organization, is to create a properly constituted body, a sort of parliament, with proportionate representation from each province. Hitherto we have had the Executive Council, but this body has been chosen in an absolutely casual way at the times of the general meetings by members who happened to be present at the first meeting of the session. The members of the Executive Council should be properly elected by the respective provincial associations, and the council should have more work given to it and greater responsibility placed upon it than in the past.

But this affiliation of the provincial associations with the Dominion Association is only half of what should be done. The principle of affiliation should be extended to embrace the relations of the provincial with the county and city societies. At present, this is practically barren ground. The county societies have no relations with the provincial associations. They are casual and independent. Yet there can be no doubt, that, to cement the profession together, the bond between the county and provincial societies ought to be quite as close as that between the provincial and national associations.

This then, gentlemen, is what I feel sure we must strive for, and what I ask your coöperation in. Let us begin with the county societies as the centre of things. Let us group, if necessary, several counties into one good district society. Let these elect members as delegates or officers to the respective provincial associations. Where no county societies exist, let the men of that particular region organize one. This has already been proposed for Ontario by Dr. Herbert Bruce, in his recent address as President of the Ontario Medical Association for this year. He said: "I think it very desirable that there should be an increase in the number of small county medical societies, and I should like to suggest that, for this purpose, the province be divided into ten districts corresponding to the ten health districts recently established by the provisions of the new health bill. As there are forty-seven counties in the province, this would mean that each society would include four or five counties, which appears to me to be a practical arrangement. Then the method of securing membership in the Ontario Medical Association would be simplified by accepting the members of these smaller societies, which would obviously be in a better position to determine their qualifications." It seems to me that Dr. Bruce's proposal is of the greatest importance, and I would urge that a similar plan be adopted by the other provinces. Indeed, I think, gentlemen, that if this address has any value at all, that value lies in the advocacy of the idea just described. This is not the place to go into details of organization, which may well be left to the Executive Council and the general secretary; but I am convinced that a close union of all the county societies with their provincial association is the great need of the immediate future for this Association.

But it may be asked by some of you, what, after all, are the advantages to be gained by this scheme of consolidation or affiliation? Are we going to be any better off for it? Perhaps the best reply I can make to such a hypothetical question is to point to the extraordinary success of the American Medical Association. I presume it can safely be said that no national association in the world has accomplished so much in so short a space of time for the general good of the profession, as has the American Association. Any one who has followed its work at all closely, cannot but admire the extraordinary amount of good, both for the profession and for the public, which it has accomplished in the last ten to twenty years. The scope of its activities has widened enormously. It would be impossible in an address of this nature to refer in detail to all these activities, but I cannot avoid calling your attention to a few of them. It is well known to you that in the matter of medical education, not many years ago, the States, with the exception of a few prominent universities, were in a deplorable condition as regards their medical schools. The proprietary school, and as a more or less natural result, the diploma mill, flourished. The American Medical Association set itself to clean their Augean stables. Their stables were encumbered with such stuff as the diploma mill, a low standard 'of professional conduct, commercialism, quack medicines, dishonest proprietary remedies, all sorts of fake cures, and all sorts of patent medicines. They have not rid themselves, by a long way, of these matters of reproach, nor indeed has any country anywhere, but they have waged a very good war against them, and in that they serve us as a very good example. What have they done? They have established permanent, and active, and hard working committees on medical education, which have reduced the number of the low class medical schools to nearly half what they were before. They have established a committee on legislation which, in a great many ways, has been of the greatest assistance in fighting the passage of bills in favour of unqualified sects in medicine, and in favour of the proprietary interests; they have established committees on such subjects of general interest as anæsthesia and the newer remedies, which have given to the profession at large reliable information upon these things. They have organized a very large proportion of the profession in America into a united body; they have published the fullest and most accurate directory of the medical men in the United States and Canada that exists, from which, by the way, our own association has derived much benefit. They have gradually made of the *Journal* of the Association, the best all round weekly in the world; certainly the best for the general practitioner. Now the secret of the whole thing, the key-note of its success, has lain in its power to secure the loyal support of the profession throughout the country, and this they have done by the plan of organization that I have outlined above,—county societies uniting to form state associations, and state associations uniting to form the national association. It means something to a man to be a member of a county society, for that is the only gateway to membership in the state and national associations. There is no reason why we in Canada should not make a like success with our own Association and our own JOURNAL. All we need is a good start, and if we can arouse the enthusiasm and obtain the loyal support of the majority of the profession in Canada, we shall be able to follow out a like successful career. If we can only secure a large enough membership to justify the expenses of making our monthly into a weekly, we can then go ahead at a great pace. The JOURNAL will attract new members; it will pay, and more than pay, its own running expenses; it can serve as a medium of publication for the whole profession; it can influence the legislatures to enact good medical laws; it can wage effectual war on the nostrum vendors and the quacks of all descriptions; it can furnish up to date information on all subjects of interest to the general practitioner; and it can do a thousand other things which I have not space to mention here. Any tendency to the narrow view, to an exclusive attention to home affairs, to provincial chauvinism, to country or city narrowness, to personal absorption in one's own practice to the exclusion of a larger view of national medical affairs, must be combatted; and I think that I strike no false note in appealing to you all who are here present to act in your own district as missionaries in this problem, to arouse a pride in our association and a willingness to work for it. I think that I can guarantee that so far as the West is concerned that spirit is already strong in us.

Gentlemen, I know you will forgive me, knowing me as you do of old for an enthusiastic Westerner, if I now allow myself in closing, a few words upon what seems to me to be the value of the West to the profession of medicine in Canada and to this Association, and a few words also upon the future of medicine in the West.

What is the value of the West to medicine? Does not the answer lie in the words, energy and newness and opportunity. The West is young and lusty, and full of life. It has a love of action, and it has a love of newness. It is unhampered by traditions, whether of conduct or of science. It will do the things that it thinks right, whether in conduct or in science. I really do believe that, in medicine as in the rest of human endeavour, the West is going to supply that leaven of originality which, after all, is "the one thing needful." The West thinks boldly and acts boldly, by necessity first, then by conviction, and ultimately by habit. Give the West a little more time to establish herself soundly in the higher education, by means of provincial universities, and she will yield a rich harvest of energetic and trained men who will have in them that invaluable dash of western originality which makes for really big work.

And now, what is to be the future of medicine in Alberta and the West? I think it will be admitted by everybody that the goal towards which we must strive in the matter of medical education in Canada, is the establishment of a first class medical school in each province of the Dominion, as part of a provincial university. This does not mean that each province must have a medical school as a necessity of itself; it means rather that with the enormous growth in population in Canada, it will become inevitable that each province shall have a medical school, and that we must see to it that that medical school is a first class one. In Alberta, we already have, and have had for the past four years, a provincial university which is doing excellent work under the able presidency of Professor Tory. We have no doubt that before very long we shall be able to establish a good medical faculty. And I would point out that we have already in Alberta, first class facilities for the education of the medical man. Our hospitals are excellent institutions, and will soon be quite large enough to serve efficiently for the teaching of medicine. What we must aim at, is to establish close relations between the university and any proposed beginnings of medical teaching. There is plenty of money in the country with which to endow education. It must be our business to show to our wealthy business men the advantages which must accrue to the province at large from any financial help given to the cause of general education. I place my faith in the growing wealth of this new country, and not less in the inherent generosity of the Westerner.

It seems to me inevitable that our country will before long, not only have a university and a medical school that one may be proud of, but that these will be amply endowed with money made in the West, and given by the generous men of the West. All this may probably happen in Vancouver before it happens in Alberta, but we shall certainly not be far behind.

Looking forward, as I do, in this hopeful way to the future of medicine in the West, and anticipating as I do the training of medical men in the West, I feel sure that when we do graduate men in medicine out here, these men will do us credit. Like all Westerners, our graduates will have the love of travel, perhaps more so than have they of the East, and perhaps on the average they will have more money to do their travelling with. Already our medical men are well known in the big clinics in this country and abroad, from the mere fact that they visit them so often. This will make for broadness of view. If you get in any man broadness of view combined with energy and the progressive spirit, you get exactly those qualities which make for the advancement of medicine as a whole and the welfare of the patient in particular.

We have, out here, the advantages of a clean slate. We can begin right. We can begin where others leave off, unhampered by conditions that have got set and that are difficult to change. I hail the meeting of this national Association in Alberta, as a great stimulus. Our own men will be more encouraged to better work and our laymen will have an opportunity of seeing what the profession is doing for Canada.

And now, fellow-members of the Canadian Medical Association, I desire in closing to thank you for your patience. Yet I would not quite finish with nothing but the customary "thanks" in my mouth. Rather would I end with a renewed appeal to all the members here present, and to the whole profession in Canada, to unite themselves heartily together in this national Association, for the benefit of the individual and the benefit of the whole.

Calgary H. G. Mackid

Case Reports

REPORT OF TWO CASES OF ABDOMINAL SURGERY

CASE 1: Removal of a large fibro-sarcoma of the mesentery, together with nine feet eleven inches of the small intestine.

On December 26th, 1911, Dr. Dougan, of Harvey Station, brought into town a Mrs. W. R. to consult me because of an abdominal tumour. She was the mother of eleven children, the youngest being nine years. Her age was fifty, and menstruation had been somewhat irregular of late. Up to two years ago she had always enjoyed good health. At that time she had a severe attack of stomach trouble, attended with pain and belching of wind, which lasted about a week. Six months afterwards she had a similar attack. Since then these spells have recurred more and more frequently. They have never been accompanied by vomiting. For some months past constipation has been an increasingly prominent symptom, and she has lost a considerable amount of flesh. About a month ago she accidentally felt a lump in the abdomen, no pain or soreness calling attention to it. One of her sisters died of cancer of the breast.

On examination I find her a rather pale woman, but not badly nourished. In the belly is felt a hard and somewhat irregular tumour about the size of a fœtal head lying in the median region and extending from a little above the navel to a point midway between that and the pubes. It is fairly movable, and not much, if at all, tender on palpation. Per vaginam I can find no connexion between the tumour and any of the pelvic organs.

As her bowels had been well moved on the previous day in order to prepare her for an immediate operation on her arrival, the anæsthetic was administered by Dr. Dougan, and with Dr. Holden assisting, an incision was made in the median line from a point two inches above the navel to four or five inches below it. On clearing away the parts I found a dark red tumour, hard and somewhat nodulated, occupying the middle of the mesentery, its border reaching to within an inch of the bowel. There were no enlarged glands, and the liver seemed all right.

After freeing the tumour from its surroundings I lifted it out of the abdomen. I now placed ligatures of linen thread all around it, about three-quarters of an inch from its margin, and cut it away.

Clamps were then applied on a line corresponding to the amount of mesentery removed, and this portion of bowel removed. An end to end union was made with two rows of linen suture, and the mesentery was sutured with the same material. After cleaning up the parts, I replaced the bowel and closed the abdominal wound with tiers of catgut for the deeper parts and interrupted silk-worm gut for the skin.

December 27th.—Slept three hours without any opiate. Has raised gas often, but has had very little vomiting. P. 70; T. 98°. Dr. Holden has measured the length of bowel removed and found it to be nine feet eleven inches. He has also examined the tumour, and it proved to be a spindle-celled sarcoma.

December 28th.—Rested fairly well last night. Has vomited a few times during the last twenty-four hours. P., 84; T., 99°. Complains of a feeling of weight and distress in the upper abdomen, for which I washed out the stomach. In the evening I repeated the washing-out with considerable relief.

December 29th.—Passed a fair night. Has taken a little milk and tea and retained it. Pulse, 62; T., 98°.

December 30th.—Had a small loose movement of the bowels this morning. Has taken a few ounces of beef-tea. Pulse and temperature as yesterday.

December 31st.—A good night. A loose movement again this morning. Asks for and may have a small piece of toast.

January 6th.—A couple of loose stools every day, but otherwise doing well. An occasional dose of one-twelfth of a grain of morphine to help keep the bowels quiet.

January 13th.—Bowels remain the same. Patient is out of bed. Sutures are all out and the wound soundly healed.

January 19th.—Improving rapidly in every way except as regards the bowels. Left for her home by train and sleigh this morning.

March 20th.—Her husband reports that patient is gaining in flesh and strength, and that her bowels are "all right."

July 1st.—I learn from Dr. Dougan that she is continuing in good health.

Remarks: The case above related, we think is worthy of record, both on account of the somewhat unusual situation of such a tumour, as well as because of the removal of so extensive a portion of the intestine. The rapidity and smoothness of the convalescence seems to me surprising after so serious an operation. The pulse never reached as high as 90, and the temperature registered at no time as much as 100 degrees.

Apparently one of the chief troubles which are apt to follow an extensive resection of the small intestine is an obstinate diarrhœa. In this case, however, although for a few weeks some looseness occurred, from the latest reports this seems to have entirely ceased.

Furthermore, one would have expected that after the removal of so large a part of the small intestine, there would scarcely be enough left to provide for the proper nutrition of the body; but as a matter of fact, the weight of the patient has increased since the operation, and in every way she is doing well.

In the November number of the *Annals of Surgery* for 1911, Dr. Whitall, of Philadelphia, reports a successful case of removal of ten feet eight inches of the bowel, which had escaped through a tear in the uterus after the removal of a four months fœtus. In this article he refers to a report by Dr. Roswell Park of five other resections of the intestine, where from ten feet four inches to twelve feet two inches had been removed by different operators with three recoveries and two deaths.

CASE 2: Lane's operation of short-circuiting for intestinal stasis.

E. H., aged twenty-two years, school teacher. Four years ago had an attack of what was supposed to be appendicitis of a few hours' duration. A year afterwards suffered from a mild attack of typhoid fever. Subsequently he began to be troubled with constipation, which gradually grew worse, until neither cathartics nor enemas gave satisfactory relief. On several occasions during the last three years he has had severe and prolonged bouts of vomiting, which seemed to be due to the constipation. In the fall of 1911, one of these attacks lasted two weeks, and the attending physician advised an abdominal section, but he finally got better without it. After this attack he got quite well again, with the exception of his old difficulty of getting a movement of the bowels, which became worse than ever. On being consulted, therefore, I advised an exploratory incision to see if anything could be done to remedy the trouble. To this he consented, and on January 15th I did the following operation, with the assistance of Drs. Holden and Mullin.

An incision five inches in length was made to the outer side of the left rectus, and the descending colon was found to be all right. Then I passed my hand across to the other side, and there I felt adhesions about the cæcum and ascending colon. Having placed a few temporary sutures in this incision to prevent the bowel from escaping, I made another on the opposite side, and getting hold of the lower end of the ileum I secured it with two clamps about six inches from the cæcum, and divided it between them. After burning the mucous membrane of the lower end with the thermo-cautery, I closed it with a through and through suture of chromic catgut and a Lembert of linen. I now carried the proximal end beneath the abdominal wall out through the first incision, and, pulling up the upper part of the rectum, made an end to side anastomosis, both rows of suture being of linen.

I did not see or feel the appendix during the whole operation, probably because it was hidden by adhesions. After cleaning up the parts, the incisions were closed as in Case 1. The whole operation was rendered unusually difficult because of the constant straining of the patient and the constant tendency of the intestine to escape through the wounds.

January 16th.—Has been troubled with gas very much since the operation, and has had two hypodermics of one-eighth of a grain of morphine. He has had frequent vomiting, also, during the night. The pulse is 110; T., 98·6°.

January 17th.—A good deal of restlessness, pain, and vomiting still continues. Had a hypodermic of one-sixth of a grain of morphine in the night. P., 110; T., 98°. Washed out the stomach, but little was got away.

January 19th.—Vomiting keeps up. The stomach was washed out yesterday with some apparent relief. P., 104; T., 98°. At eight o'clock in the evening I changed the dressings for the first time. There was a slight redness about some of the stitches, but otherwise the wounds looked well.

January 21st.—Not much vomiting since last report. Liquid fæces are escaping through a rectal tube.

January 24th.—Bowels move nearly every day.

January 25th.—During last night some thin serous discharge was found on dressings on left side, and on uncovering this wound it was found that some of the sutures had given way and a knuckle of bowel was protruding. This was returned by the nurse and a strip or two of adhesive plaster put on, but at my visit I found that all the sutures had yielded and the intestine was freely escaping. I therefore injected a weak solution of cocain on each side of the incision and put in through and through mattress sutures of silk-worm gut, a pledget of gauze being placed beneath the loops at each side. I did not dare to give an anæsthetic for fear of a repetition of the previous retching and vomiting.

January 25th.—On removing the dressings from the wound on the right side this morning, I found the stitches all torn out there and the bowel protruding. I at once closed it as I had done the one on the other side.

January 26th.—Some morphine was required last night to relieve pain; patient slept fairly well. Some serous discharge. P., 100; T., normal.

January 28th.—Doing well. P., 70; temperature runs from normal in the morning to 99·2 in the evening. Bowels are moved every day, either spontaneously or by enema.

February 7th.—Sutures all removed from both wounds. Bowels are rather sluggish and require an occasional enema.

February 14th.—Doing well. Left hospital for home.

April 7th.—Feels better and brighter than before operation, but frequently requires a glycerine suppository or enema. The stools are always soft, however.

June 27th.—Is looking and feeling well, but bowels still require a little help to secure a movement.

Remarks: The unfortunate giving way of the sutures in this case was mainly due, no doubt, to the strain put upon them by the frequent and prolonged vomiting, which occurred after the anæsthetic. It is possible, too, that some slight sepsis in the wounds may have been a contributing cause, although a little redness about the individual stitch holes was the only evidence of such, and little if any pus was seen at any time.

The operation has, so far, given a marked degree of relief in this patient, and, if difficulty in getting a stool should become very considerable again, one can have resort to the excision of the unused portion of bowel, which Mr. Lane recommends should be done in these cases. Indeed, he advises that this should be done in all cases in which the additional shock thereby occasioned is not too much of a tax on the patient.

Lane goes so far as to recommend his operation for children with tubercular joints and for women suffering from cystic degeneration of the breasts, claiming that these diseases are often produced by the absorption of the poisonous material which is contained in the unduly retained fæces. Whether he is right in attributing so much disturbance of the system to this cause remains to be proved by the results obtained. It seems scarcely possible that so varied an amount of disease can be produced by intestinal stasis as is claimed by him.

Fredericton. A. B. ATHERTON.

A CASE OF ACUTE FAT NECROSIS; OPERATION; RECOVERY

THROUGH the kindness of Dr. W. A. Sangster, of Stouffville, Ont., I was called on August 24th, 1911, to see Mrs. R., who gave the following history. On August 19th and 20th she was constipated, but was not laid up with it. On August 21st she was seized with acute pain in the epigastrium, with vomiting. Dr. Sangster was then called in and, on his arrival, he found her in a state of collapse, with marked rigidity of the whole abdomen. Stimulants and sedatives improved her condition during the next twenty-four hours, but the pain and soreness persisted, and in the three following days gradually spread from the right hypochondriac region across the epigastrium to the left side. Her temperature during this time ranged from 98° to 101° and the pulse from 120 to 140.

On Thursday, August 24th, I was called in consultation. The patient, a woman, thirty-seven years of age, was large and very fat, and was lying in bed looking very sick. She was markedly flushed and looked very toxic. As she had just had a free evacuation of her bowels, she said she felt a little more comfortable than before. She was slightly jaundiced. Her temperature was 102°, and pulse 140. On examining the abdomen, I found the wall had a very thick layer of subcutaneous fat. Rigidity was present all over, but was more marked on the right side. The whole upper part of the abdomen was tender, but the gall-bladder area was especially so. The presence of the rigidity, tenderness, and a thick abdominal wall, made it impossible to determine the presence, or absence, of a tumour.

On inquiring into her past history, I found that she had had a number of attacks of colic in the gall-region. Immediate operation was advised, a tentative diagnosis of acute cholecystitis with gall-stones being made.

An incision was made through the upper right rectus and, on opening the peritoneum, the omentum was found adherent to its under surface, but was readily separated. I found the omentum enormously thickened and indurated. Studded all through it were yellowish white circular nodules of the size, consistency, and appearance of split peas; each nodule was well circumscribed. Behind the omentum was an indefinite, hard, indurated, and immovable mass running transversely across the posterior wall of the abdomen, corresponding in position to the pancreas and approximately about three times its normal size. This was also studded with hard nodules like those in the omentum. The gall-bladder was deep down on the under surface of the liver, and could not be brought up into the abdominal wound on account of the thick adherent omentum and the mass below it. Some small stones could be felt in it, but it was not tense or distended. In view of the patient's general condition, and the extent of the disease in the abdominal cavity, I did not consider it advisable at this juncture to open into the gall-bladder and remove the stones. A section of the omentum with some nodules in it was removed for microscopic examination. A large drainage tube was passed down to the region of the head of the pancreas, and the abdominal wall closed with silk-worm gut, catgut, and horse-hair.

Her condition, from this time on, slowly improved. The discharge from the wound was foul smelling and profuse, and continued for three weeks. The temperature varied from normal to 101° or 102,° and both the pulse and respirations were increased in frequency. On October 15th, her doctor reports that she is in fair health, being well enough to drive six miles across the country to call on her mother.

Microscopic examination of the section of omentum shows a condition of acute inflammation of the interstitial connective tissue, with infiltration of polymorphonuclear leucocytes and congestion of the blood vessels. Areas of fat necrosis, several millimetres in diameter, are seen in the midst of the normal fat cells. They appear as indefinite homogeneous masses, in which the cells have lost their nuclei and the cell-walls have disappeared.

The condition of fat-necrosis is usually associated with some definite lesion of the pancreas, such as a hæmorrhagic infiltration, or a gangrenous or suppurative inflammation of the gland. "The researches of Hildebrand and Flexner have proved that fat-necrosis is due to the liberation of the fat-splitting ferment of the pancreatic secretion, which acts upon the fatty substance of the pancreas and adjacent parts, converting the fats into fatty acids, and subsequently into salts formed by the combination of the fatty acids with calcium" (Adami). The above case was undoubtedly one of acute gangrenous pancreatitis, because it came on suddenly and acutely with marked depression, because the pancreas was found enlarged at the time of operation, and because the discharge from the wound afterwards was very foul in character and contained sloughs. The case is also interesting from the fact that it recovered, a result which is not generally expected in such cases.

Toronto E. STANLEY RYERSON

Editorial

THE ANNUAL MEETING AT EDMONTON

THE Canadian Medical Association held its forty-fifth annual meeting at Edmonton, from Saturday to Wednesday, August 10th to 14th.

It was the second meeting in the history of the Association held in Alberta, the first one being at Banff in the year 1889, when eighty-two members registered. At this meeting at Edmonton there was a registration of three hundred and fifty members. In all respects, save that of punctuality in starting the work of the sessions, it may be said to have been an unqualified success. True, there was a little trouble in getting sufficient hotel accommodation, but this was most pleasantly overcome by the private hospitality of the Edmonton men, and particularly of Professor Tory, principal of the Alberta University.

The entertainment provided for the visitors left nothing to be desired, and the proverbial hospitality of the West had ample occasion to show itself, and did show itself.

The general meetings of the association, convened for the purpose of hearing addresses from distinguished visitors and from distinguished men within the Association were unusually interesting.

The address in surgery given by Dr. A. E. Giles, of London, England, was remarkable for its grace of diction and aptness of quotation. It was an ideal "*melange*" of scientific knowledge, literary excellence, and graceful delivery. And indeed the same may be said with all truth of the address in medicine by Dr. Blackader, of Montreal, and Dr. Adami's address, which was delivered at an evening session and which was graced by the presence of a large number of ladies.

Dr. Blackader delivered a most able dissertation upon "The Outlook in Modern Therapeutics," in which he reviewed somewhat extensively the work of the last score of years, not only in questions of materia medica, but also in those of the more recent advances in serotherapy, and particularly the work of Ehrlich. The address was no mere compilation, though indeed it was a most able and critical compilation too; it was also characterized by expressions of personal opinion gathered from a vast clinical experience controlled by scientific knowledge and the habit of scientific thinking.

Dr. Adami, in his address entitled "The Sins of the Fathers," which was to some extent of a popular character, took up in a general way the question of heredity, explaining its scientific bases; and thereupon made the practical application, speaking particularly of certain phases of the modern science of eugenics. He spoke especially of the influence of alcohol, insanity, and lues upon the children of parents suffering from these diseases. As a whole, the address was a strong plea for popular education along these lines.

Dr. Mackid, of Calgary, was the president for the year, and he is to be sincerely congratulated upon the manner in which he discharged duties that were perhaps more onerous than usual. It may be said without fear of contradiction that a large share of the success of the meeting was due to his untiring efforts throughout the year in visiting personally all the medical associations from Vancouver to Halifax in the interests of this meeting, as well as to his unbounded hospitality during the meeting.

His presidential address was remarkable for its broad outlook upon the work and needs of the Association, and for the practical character of the suggestions contained in it, looking towards the development and improvement of the Association. We would call particular attention to his advocacy of a campaign for the organization of the town and county medical societies, and for their closer union with the provincial association, of which they formed a natural, but as yet unorganized, part. We are glad to note that a resolution was adopted by the association as a whole that campaign work in the direction indicated by Dr. Mackid should be begun immediately in each province.

So much for the practical part of the presidential address; but we can hardly omit reference to his most interesting *résumé* of medicine in the West, and the value of the West to medicine. Among other things, he pointed out very happily the effect of those qualities of mind which are in a sense particular to the West—qualities of energy and of the love of newness—when these are applied to the practice of a science which is constantly advancing.

A feature of the meeting was the frequent reference, both in the president's address and in the after-dinner speeches, to the work of Dr. Roddick, of Montreal, in his finally bringing into effect the Roddick Bill. The general feeling of gratitude to Dr. Roddick was eloquently expressed by the president, and took effect in a motion presented by Dr. Forin, of Edmonton, and seconded by Dr. B. J. McConnell, of Morden, Manitoba, to the following effect:

> "That in recognition of the distinguished services rendered by Dr. T. G. Roddick, in promoting and carrying to a successful issue the Dominion Registration Act, this Association make him for life Honorary President of the Canadian Medical Association."

We are very happy to record this action of the Association, for we are sure that it will not only be a source of deep gratification to Dr. Roddick, who richly deserves this mark of esteem, but that it represents the feeling of the entire profession in Canada.

The formal sessions closed on Wednesday at noon. In a general way it may be said that the level of scientific excellence which one has learnt to expect at the meetings of the Canadian Medical Association, was well maintained. Of these a more detailed report will be found in later numbers of the JOURNAL.

It is gratifying to learn from the report of the general secretary that the membership of the Association has increased during the past year by over three hundred and fifty members, including the new members who joined at the Montreal meeting of last year. These, together with the additions to membership at the present meeting, bring the sum-total up to over one thousand four hundred.

The Executive Council decided upon London, Ontario, as the next place of meeting, and at the last general meeting Dr. H. A. McCallum, Professor of Medicine in the London University, was chosen as the President Elect.

In conclusion, on behalf of the association as a whole, we must tender our thanks to the members at Edmonton, and to the President, Dr. Mackid, for all their hard work in preparing for what has been one of the pleasantest meetings of the Association in many years.

EATING THE LEEK

Enter *Fluellen.*

Flu.—Got's plood! Up to the preaches, you rascals! Will you not up to the preaches?

(*Driving them forward.*)

Pist. Be merciful, great duke, to men of mould!
Abate thy rage, abate thy manly rage!
Abate thy rage, great duke!
Good bawcock, bate thy rage! use lenity, sweet chuck!

IT cannot be denied that the logical outcome of the present attitude of our profession towards its duties and towards the laity, is the establishment, in the not distant future, of what may be termed the Chinese method of recompense. When our profession as a body takes the foremost place in promoting the prevention of disease, the greater its triumphs the fewer must be the patients, the less the income of the practitioner. If this altruism is to continue,—and it is bound to continue,—

the only rational means whereby the general practitioner can keep body and soul together will be by the community paying for being kept well, rather than for being treated when sick. We can, indeed, go further and lay down that just as preventive medicine, as public medicine, is calculated not for the benefit of any particular individual, but for the well-being of the community at large, so, not the individual but the community must recompense the doctor, and the general practice of medicine must become a national service, endowed by the state.

That strange, uncomfortable demagogue enthusiast, Lloyd George, who for good or ill, has of late years exercised so large an influence upon the destinies of Great Britain, would seem in his Insurance Act to have had a premonition that this is the future of medicine, in fact, to be preparing for a nationalization of the profession. It would be useless to deny that the Act, could it be carried out with the loyal coöperation of all parties, would do much to improve the health conditions in the Old Country. If one section alone could be carried into operation, that, namely, providing for the eradication of tuberculosis by a complete national system of dispensaries, hospitals and sanatoria, its benefits to Great Britain would be incalculable.

But, unfortunately, in his impulsiveness Mr. Lloyd George has gone the wrong way to work. So radical a change as that proposed, that of establishing national insurance with its sequential free medical treatment, can only be carried out with the cordial agreement of the medical profession. Now, the medical profession in Great Britain, just as here in Canada, is formed of free and independent individuals. No profession has been less untrammelled—there is not even a state license to practise. What control there is, including medical registration, is in the hands of the Medical Council, a body composed wholly of medical men, thirty-four in number, of whom but five are appointed by His Majesty-in-Council, the rest being chosen by the various license-granting corporations and by the profession at large. It is one thing for certain members of the profession to enter voluntarily into agreements with sundry Friendly Societies and other bodies to treat the members of those societies at a given rate per head; that is wholly within the liberty of the individual. It is a very different matter for the government to lay down, without consultation or freedom of choice, that henceforth a definite sum per annum shall be the amount paid by the State for the care of all those (some thirteen million in number) who, their wages being below a certain minimum, must enter into the scheme of national insurance. Had Mr. Lloyd George approached the profession in the first place, asking for advice regarding the scheme and regarding the scale of the capitation fee, matters would have been very different. There is not the least doubt but that the majority of the general practitioners of Great Britain would have entered cordially into the scheme; but it is a very different matter to be told by this Fluellen to eat his uncooked leek, willy nilly.

The result has been that, with a unanimity never before exhibited, the profession has come together, and on July 24th, at the Liverpool meeting of the British Medical Association, has repudiated Mr. Lloyd George, and has refused to accept office of any kind under the National Insurance Bill until the demand of the association be acceded to that the government grant for medical attendance upon the subjects of insurance shall be eight shillings and sixpence ($2.10, or thereabouts) in place of six shillings, which had been thrown to the profession without consultation or so much as "by your leave." It is deserving of note that this capitation grant of eight shillings and sixpence is what the government and the municipalities grant for attendance upon the members of the post-office staff, the fireman, and the police.

And now Fluellen may bluster, or cringe, or indulge in perfervid oration to his heart's content, but it looks very much as though he himself must eat the leek.

It is just to our *confreres* to state that we do not for a moment believe that their revolt has been determined primarily by pecuniary considerations. The profession has felt itself insulted by the treatment to which it has been subjected, and it is most inspiring to see that, as a body of free and independent men, our *confreres* have risen in union. The profession as a whole would rejoice to be delivered from the thraldom of the Friendly Societies, and from the miserable rates which the struggle for existence makes it necessary to accept from those organizations. But it is one thing for a man whose whole education has taught him to rejoice in his freedom to accept a low wage in the open market, and quite another thing for him to be forced to accept a capitation fee without his wishes being considered. We cordially hope that our *confreres* will remain firmly banded together until Mr. Lloyd George eats his leek with good grace, and approaches them in the proper spirit.

"*Use lenity, sweet chuck!*"

THE WHITBY ASYLUM

THE mentally afflicted of Ontario are to enjoy every advantage and nothing is to be left undone that may add to their chances of recovery. One of the most potent factors in the development of the body is found in environment; that this is equally true of the mind is recognized by those who have planned the new asylum at Whitby. The asylum will consist of a group of buildings ideally situated and overlooking the Whitby Bay and the beautiful lake of Ontario. Instead of one central insane asylum, there will be several hospital buildings, in which patients will be treated as their condition may demand; there will be, in addition, cottages where patients may be placed who are only temporarily afflicted or who are convalescing. In this way, people who are suffering from slight mental trouble, and who would shrink from entering an insane asylum, can be treated in the admission hospital building, and thus avoid the horror of close proximity with those who are violently insane. These cottages, or convalescent homes, will be eight in number, and will be built as nearly as possible like summer residences; each cottage will provide room for fifty patients.

Two wards are provided for the treatment of advanced cases. These have been placed at some distance from the cottages, so that those undergoing treatment there need not even be aware of the existence of the violently insane cases.

Every man who is physically able to work will be employed upon the farm, and the women will be kept occupied in domestic duties. Small gardens are to be arranged in which some of the women will work, and thus gain the benefit of being in the open air.

The cost of the buildings will be about seven hundred thousand dollars. The necessary expenditure has been materially diminished, as much of the work has been done on the prison farm at Guelph. As a means of recreation, a skating rink has been provided, and two large areas have been allotted as recreation grounds; a church also will be built. The institution will provide accommodation for twelve hundred patients; but the plans have been so arranged that the buildings may be extended in the future to permit of twice this number.

The beauty of the site chosen and the arrangement of the buildings will undoubtedly do much to benefit those undergoing treatment in the new asylum; but the natural beauty of the surroundings will, perhaps, help most of all those who are labouring to help the sufferers placed in their care. Work amongst the insane is, without doubt, the most exacting branch of the medical profession, and those who are engaged in such work surely need all possible assistance that can be given to them.

THE MUNICIPAL ABATTOIR

THE health of the individual is necessarily dependent in great measure on the food supply, and the danger arising from the consumption of impure meat is a great one. The question which arises is, "How is it possible to ensure a pure and wholesome meat supply?" After an investigation of some months' duration, Dr. Hastings, the medical health officer for Toronto, has issued a report which shows conclusively that the only effective remedy for impure meat is the establishment of a slaughter house which shall be under municipal control. As a result of Dr. Hasting's investigations and conclusions, it has been decided that Toronto shall have a municipal abattoir.

The municipal abattoir is now recognized as the only solution to the meat problem, both in Europe and in the United States. In Germany, any community may erect a public abattoir and, having done so, may prohibit slaughtering except in such abattoir; and, by the meat inspection act of 1900, a thorough system of inspection, both before and after slaughtering, is in vogue. In Italy, all communities of a population of over six thousand are required to construct public abattoirs, and the directors of these abattoirs must be veterinary surgeons. In Holland, in Portugal, and in France, the public abattoir is common, and has proved successful. In England there are over one hundred municipal slaughter houses, but private slaughtering is not prohibited; consequently, the financial success of the English abattoirs is not so great as is that of those on the continent. The first municipal slaughter house to be established on the American continent was that at Paris, Texas.

The advantages to be gained by the establishment of a municipal abattoir are enumerated by Dr. Hastings, and we cannot do better than quote from his report: "It will enable us to secure for every citizen a pure, wholesome meat supply produced under the most sanitary conditions; it will remove the various nuisances created by slaughter houses in different parts of the city, also the nuisance of driving cattle through the streets from the market to their destination, which is a source of danger to the public, to say nothing of the sufferings of the beasts themselves when the roads are icy or the heat extreme; it will ensure these animals being slaughtered in the most humane way."

The establishment of the municipal abattoir is rendered less difficult by the fact that it is self-supporting, if properly administered. This has been unmistakably demonstrated in European cities, where such slaughter houses have been in existence long enough to give statistics. The greatest source of revenue is from the manufacture of the by-products, which, it is stated, more than pays the cost of any abattoir.

THE KENTVILLE SANATORIUM

THE provincial sanatorium at Kentville, N.S., has published its annual report for 1911. The hospital was established in 1904, by the provincial government, for the treatment of early cases of tuberculosis. That the result has been encouraging is seen from the following figures, taken from the report for the past year: fifty-five patients were admitted to the sanatorium; thirty-one per cent. of these were in the incipient stage of the disease; sixty-seven per cent. were moderately advanced cases; and two per cent. were far-advanced cases. Six months later, twenty-six per cent. of these patients were discharged, apparently cured; in sixty-two per cent. the disease was arrested; and ten per cent. were improved, leaving only a balance of two per cent. which showed no improvement.

This result compares favourably with that of other institutions for the treatment of tuberculosis, and shows the importance of early diagnosis and treatment. Great importance is attached by the medical superintendent to the necessity of sanatorium treatment; it is essential that the patient should first undergo a period of treatment in a sanatorium, after which the treatment may be continued at home.

Ignorance is one of the chief factors in the spread of the disease, and an important step in its prevention is the dissipation of this ignorance, and the education of the patient in matters relating to hygiene, diet, and the necessity for plenty of fresh air, with a moderate amount of exercise. The *early* diagnosis of pulmonary tuberculosis is often difficult for the general practitioner, but is of the utmost importance for successful treatment. Provision is made that any individual in the province of Nova Scotia may go to the sanatorium and be carefully examined, provided he make proper application.

The work of the sanatorium has increased very greatly during the last two years, and an extension is now found to be necessary. Much difficulty was experienced during the first few years after its establishment, owing to the lack of interest in the work to be done, and an insufficient knowledge on the part of both profession and public, as to the best methods of dealing with the disease. This difficulty has been experienced by many institutions, particularly in the early days of their activity. It is suggested by Dr. Macdougall King, in a recent article in the *Public Health Journal*, that much might be done by the Dominion Anti-tuberculosis Association to assist the various local and provincial institutions in the work of preventing the spread of tuberculosis.

An important addition is to be made to St. Luke's General Hospital at Ottawa. This is to consist of a new wing, which is to be added to the east side of the hospital. The cost of this additional wing will be about one hundred thousand dollars, which is double the original cost of the hospital. St. Luke's Hospital was incorporated in 1897; the founder of the hospital was Dr. H. P. Wright, who bequeathed ten thousand dollars to the institution. The present hospital makes provision for seventy patients. The accommodation, however, has been far from adequate and, for the last two years, the necessity for enlargement has been becoming more and more evident. During the past year, one thousand three hundred and one patients have been admitted to the hospital; these figures are in striking contrast to those of the first year, when nine hundred and forty-one patients were treated.

It has been suggested that a municipal icehouse be established in Toronto. The cost of ice has increased greatly and is now prohibitive for the poor, who consequently are unable to preserve food in the hot weather or to keep their milk sweet. This naturally reacts on the health, especially of young children; and it is stated that the infant mortality during the summer months is a direct consequence of these conditions. This fact is true, not of Toronto only but of all the large cities of the Dominion. By the establishment of municipal icehouses and by supplying ice to citizens at cost price, or even free in cases where it is considered necessary to do so, the health of the children of the community might be greatly improved and much suffering prevented during the summer months.

An excellent method of purifying drinking water is given in the June issue of the Toronto *Health Bulletin*. It is intended, principally, for use in summer resorts, where the water may not be above suspicion, and reads as follows: "Take a level teaspoonful of chloride of lime and rub it up in a teacup of water until there are no lumps. Dilute this with three cupfuls of water and keep this stock solution in a stoppered bottle for use. A teaspoonful of this solution added to a two-gallon pail of water, and well stirred up, will destroy all typhoid and other dysentry-producing bacilli in ten minutes, and make the water safe to drink. Get chloride of lime in the pound packages with metallic cases (not cardboard cases). The stock solution will keep for a week." The method has been worked out by Dr. Nasmith and Dr. Graham, and is widely used as a preventative of infection through drinking water.

Book Reviews

LANDMARKS AND SURFACE MARKINGS OF THE HUMAN BODY. By L. BATHE RAWLINGS, M.B., F.R.C.S. (ENG.). Fifth edition, with thirty-one illustrations; price 5s. net. London: H. K. Lewis, 1912.

The English student has always been strong on the subject of "Landmarks and Surface Markings of the Human Body." Innumerable books have been provided for him and he still appears to demand more. But none of the claimants have displaced Rawlings' well-known work. This is the fifth edition and the illustrations are even more ingenious than in previous ones. Also they are very beautifully printed. The book does not pretend to replace a work on anatomy, although there is plenty of anatomy in it, but it really does give, in the form of diagrams, the most of what is important in anatomy.

CLINICAL CHEMISTRY, MICROSCOPY, AND BACTERIOLOGY. By DR. M. KLOPSTOCK AND DR. A. KOWARSKY, of Berlin. Illustrated with 43 textual figures and 16 coloured plates. Price, $3.00. New York: Rebman Company, 1912.

The Rebman Company have a singular capacity, to which we have called attention on previous occasions, of selecting for translation the best of the books which are written in foreign languages. This manual is no exception to the rule, and it will make a strong appeal for a place in a field which is already well occupied. Many of the laboratory methods are new and impress one by their neatness and simplicity.

THE CARE OF THE INSANE AND HOSPITAL MANAGEMENT. By CHARLES WHITNEY PAGE, M.D. 154 pages; price prepaid, $1.00. W. M. Leonard, Publisher, Boston.

Dr. Page has familiarized himself with every aspect of insanity during a period which lasted for over forty years. He was one of the first superintendents to insist upon methods which did not imply restraint, and this book is really a summing up of that thesis. It is full of wisdom which is born of experience, and is marked by that wide humanity which actuates all who deal worthily with the insane. The book is one which should be read by members of the profession at large.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A SYSTEM OF TREATMENT BY MANY WRITERS. Edited by ARTHUR LATHAM, M.D., F.R.C.P. (Lond.), and T. CRISP ENGLISH, M.B., B.S. (Lond.), F.R.C.S. (Eng.). Four volumes. Vol. I. General Medicine and Surgery; Vol. II. General Medicine and Surgery; Vol. III. Special Subjects; Vol. IV. Obstetrics and Gynæcology. Price, $24.00 the set. Toronto: The Macmillan Company of Canada, Ltd., 1912.

DISEASES OF THE EYE. A manual for students and practitioners. By J. HERBERT PARSONS, D.Sc., M.B., B.S., F.R.C.S. Second edition. Price, $3.50. Toronto: The Macmillan Company of Canada, Ltd., 1912.

AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS BY VARIOUS WRITERS. Edited by HERBERT FRENCH, M.A., M.D., (Oxon.), F.R.C.P. (Lond.). With sixteen coloured plates and over two hundred illustrations in the text; price, $8.00. Toronto: The Macmillan Company of Canada, Ltd., 1912.

A COLLECTION OF PAPERS PUBLISHED PREVIOUS TO 1909. By WILLIAM J. MAYO, M.D., and CHARLES H. MAYO, M.D. Volumes I and II. Price per set, cloth, $10.00 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents, The J. F. Hartz Company, Limited, Toronto.

A PRACTICAL TEXT-BOOK ON THE DISEASES OF WOMEN. By ARTHUR H. N. LEWERS, M.D. Seventh edition; illustrated. Price, 12s. 6d. net. London: H. K. Lewis, 1912.

THE CARE OF THE SKIN AND HAIR. By W. A. PUSEY, A.M., M.D. New York and London: D. Appleton & Company, 1912.

Men and Books

By Sir William Osler

XIII. The School of Physic, Dublin.* To have been selected to propose the toast of the evening I take as an honour to the university with which I am associated, Oxford, *mater studiorum* of these Isles in philosophy, theology, and medicine. In reality, the toast has already been proposed, and in fine form, by Dr. Kirkpatrick in the just issued "History of the School of Physic," which the Provost and Fellows have so kindly distributed to their guests; and to enable you to drink the toast with sympathetic intelligence I should have to read to you the four hundred pages of his work. While Trinity College itself has had close affiliations with Cambridge, those of the School of Physic have been rather with Oxford. Stearne, the founder, was a close friend of Seth Ward, of Wadham College, and may have been a member of Boyle's "Invisible College" in those brilliant days when Wallis and Wilkins, Ward and Willis, Wren, Locke, Petty, and others, "investigated nature by way of experiment." John Locke, the most famous name in English philosophy, and the great glory of the college with which I am connected, Christ Church, was a warm friend of the men who began this school—particularly of the Molyneauxs, William and Thomas: William, a philosopher of distinction, and the first man in this country, I believe, to see the capillary circulation; and Thomas, a distinguished physician, the first Irish medical baronet, and an early president of the College of Physicians.

An interesting manuscript in the Bodleian, in Locke's handwriting, contains a correspondence on the subject of vital statistics with two well-known Dublin physicians, Willoughby, a Fellow of Merton College, and Patrick Dun, the moving spirit of his day in the profession of this city—a wise, farseeing man, whose name is perpetuated in the hospital of this School.

But Oxford's greatest gift to Ireland was her professor of anatomy and the vice-principal of Brasenose College, William

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* Toast proposed at the Graduates' Dinner, Bicentenary Celebration of the Trinity College Medical School, July 4th, 1912.

Petty—philosopher, inventor, one of the founders of the Royal Society, promoter of this School of Physic, one of the founders of the science of political economy, author of the "Political Anatomy of Ireland," and of the "Political Arithmetic"; but best remembered in Ireland in connexion with the famous Down Survey. Were there time, I should like to have dwelt upon some of the achievements of this extraordinary man, who came here as physician-general to the army, and who completed in thirteen months a survey which others had estimated would take as many years, and which is to-day "the legal record of the title on which half the land of Ireland is held." Last year chance threw in my way the manuscript letter-book of Petty from 1666 to 1686, and the other evening I found, bound with them, an interesting manuscript of Petty dealing with the famous survey—the agreement with Fleetwood, the names of the officers, and the sums received from them, and the names of the men engaged in the work. The true bibliophile has a keen pleasure in seeing an important document in its proper home, and I have great pleasure, Mr. Provost, in asking you to place this in the library of Trinity College as a slight token of my appreciation of your warm reception of us on this memorable occasion.

We may pass over the dark days of the eighteenth century, in which the school experienced the trials and tribulations so common in the history of all institutions—days brightened, indeed, by the devotion and brilliant work of such men as Barry, Bryan Robinson, and Cleghorn. Then came the glorious period of the first half of the nineteenth century, when the Dublin School reached a zenith of world-wide fame in medicine, midwifery, and surgery. Medicine proper has passed through three phases of activity—the recognition of disease and the means for its cure, the discovery of its causes, and the measures for its prevention. It is the great merit of the Irish school to have taken a first place in the clinical study of disease. You have had many men of the first rank as physicians—Barry, Cheyne, Adams, Whitley Stokes, Corrigan, Hudson, Lyons, Banks —to mention only those whose names I know best, but it is no disparagement to the memory of those distinguished men to say that the imperishable glory of your school is associated with the names of Robert James Graves and William Stokes. Both were men of exceptional culture and refinement, devoted students of the Art, bedside teachers, whose influence is still potent, and authors who raised the fame of Irish medicine to a supreme height. I need say no more. Their works follow them, and are to-day full of lessons for those of us who realize that the best life of the teacher is in supervising the personal daily contact of patient with student in the wards.

This is a graduates' dinner, and at last I come to a part of the toast which I know at first hand. Graduates of this school have been much in my life. To usher me into this breathing world one of them came many weary miles through the backwoods of Canada. Across his *tie*, as he called it, John King, M.A., T.C.D., birched into me small Latin and less Greek. I owe my start in the profession to James Bovell, a kinsman and devoted pupil of Graves, while my teacher in Montreal, Palmer Howard, lived, moved, and had his being in his old masters, Graves and Stokes.

From the days of Columba, the Irish of all classes have had a passion to perigrinate, and at every step in my career I have met your fellow graduates in Toronto, in Montreal, in many country districts of Canada, in the great cities of the United States, in lonely villages in Virginia and the Carolinas, and now in the very different surroundings of Harley Street and the pleasant villages of the Thames Valley—and everywhere the same intelligent and highly trained men, ever working with the Hippocratic spirit, *caute, caste et probe*, and ever leaving their patients if not in better health, at least in better spirits.

Res Judicatæ

THE EXPLORATORY PUNCTURE

THE puncture for exploratory purposes is usually applied to the pleural cavities, to the spinal canal, to joints, to bursæ, and to superficial collections of fluid, while it is employed but rarely in the case of the pericardium and the peritoneum. The removal of fluid by aspiration is not at this moment under consideration; nor is the use of the puncture needle upon organs such as the liver or the lung, in which the existence of abscess is suspected, after their exposure by operation. There are advocates of the procedure of puncture of the liver and the spleen through the abdominal wall for the detection of parasites, but this is open to various grave objections, especially in the case of the liver, which is apt to bleed, and around which the presence of adhesion can scarcely be predicated. It is rather with the more every-day forms of exploratory puncture that we are here concerned.

The knee joint is the articulation most frequently punctured, and this is a safe, and usually easy, procedure; even in the case of definite and rapid effusions and in the presence of turbid exudate, one is not infrequently disappointed in obtaining cultures therefrom. Where an organism is found, an autogenous vaccine may be made which could not have been otherwise obtained. It will be familiar to some readers that of late the washing-out of joints in rheumatic fever has been advocated. It must be confessed that this seems to consider the arthritis as cause, whereas it may be effect, relative to the general manifestations of the disease; but, at the same time, there are many rheumatic joints that certainly appear as if they would be the better of irrigation.

Paracentesis of the pericardium is rarely done for the purpose of diagnosis, and not very often for the evacuation of fluid that is known to be there. The writer has no experience of it, and by enquiry among colleagues, finds but few who have any knowledge of it. In a case of pericarditis with a definite friction rub which disappears and gives place to a definite and large effusion, the puncture for detection and removal of the fluid would probably appeal to most clinicians as rational and not too difficult; the fact remains that the heart is often punctured by inadvertence, and that a small opening made by free surgical incision is safer and, in the occasional case of pyopericardium, more efficient. It is only fair to the procedure to say that inadvertent puncture of the heart in the majority of cases is followed by no bad result; but a severe hæmorrhage into the pericardium from the wound of a dilated auricle might be occasioned.

When puncture of the pleura is under consideration, it may be said that, often as it is done, it is not performed too often. A consultant of large practice recently said that most of his consultations concerning diseases of the lungs are solved by the use of the exploratory needle, in which connexion we recall a famous European clinician, who may almost be said to carry an exploring syringe as every one else carries a stethoscope. Within a few months of the time of writing, one of our contemporaries published a formidable series of accidents arising from puncture of the thoracic wall; interesting as such a paper is, it seems more likely to deter the timid than to curb the bold. The mishaps are a very minute percentage of the punctures performed, and are evidently the price mankind must pay for the advantages of paracentesis. It is but just to state that the author says that more harm results in cases in which punctures ought to be made and are not, than in those where the exploration is duly made, a statement that might well be underlined. A wooden flatness in the lung area usually means fluid; the point of the puncture needle may be moved in or out, but ought not to move laterally; if other areas nearby are to be explored, they should be essayed by new punctures through the skin. To puncture the lung rarely causes noticeable harm, and slight pneumothorax is often not dangerous. During and after pneumonia, especially in children, the physician will do well to have recourse to the needle early in cases which do not promptly terminate: a diagnosis of unresolved pneumonia ought never to be made until empyema has been absolutely excluded.

Lumbar puncture is an extremely useful procedure, not only in the diagnosis of meningitis, but also in suspected injury of the skull, where blood in the fluid becomes of the highest import. In cases suspected to be syphilitic, the determination of the globulin content, and the presence of a relatively great number of cells per cubic millimeter may determine the presence of infection. Should the cerebro-spinal fluid be under great pressure, the consensus of opinion is that only a small quantity, 10 c.c., ought to be removed at a time; failure to reach the canal, in the hands of those comparatively unused to the procedure, may result from the use of too short a needle.

Montreal. J. M.

Retrospect of Surgery

EXPERIMENTAL INTESTINAL OBSTRUCTION IN DOGS WITH ESPECIAL REFERENCE TO THE CAUSE OF DEATH AND THE TREATMENT BY LARGE AMOUNTS OF NORMAL SALINE SOLUTION. BY HARTWELL AND HOGUET, *Journal of the American Medical Association*, July 13th, 1912, p. 82.

THE paper deals with the cause of death in dogs following intestinal obstruction, by means of a special clamp which produces a complete block of the intestinal lumen without any interference with the circulation through the intestinal wall. From the standpoint of symptoms and length of life, it was found that an uncomplicated intestinal obstruction varied little, whether it occurred high up in the small intestine or near the cæcum. The only difference noted was that in the latter the vomitus was very foul in odour, and, possibly, was in larger quantities. Postoperative life varied from five and a half to ten days, with an average of about seven and a half days, the average duration of life being a few hours longer in that series in which the clamp was applied in the vicinity of the cæcum. At autopsy there was constantly found a more or less marked degeneration of the kidney and liver cells, going on often to actual necrosis. It was remarked that the changes in these organs were the same as those found in various toxic conditions, including that of starvation.

The beneficial effects of subcutaneous injections of saline led the authors to make a study of three dogs, in which the daily output of fluids, that is urine and vomitus, was measured, and a quantity of normal saline, about 100 c.c. in excess of this, injected under the skin. Two of these dogs were kept alive in this way for three full weeks, and one for twenty-six days, during which time they remained in good condition. They were then killed under anæsthesia for post mortem observation. By varying the amount of saline injected, the condition of the dogs could be accurately controlled.

The authors conclude that the important element in the development of the symptoms seen in the intestinal obstruction in dogs, is the loss of water due to vomiting. The symptoms of intoxication are those resulting from tissue disintegration following this loss. Replacement of the water cures the symptoms and prevents death over long periods. If strangulation complicates obstruction, the above facts do not seem to hold true.

Diffuse Dilatation of the Œsophagus without Anatomic Stenosis (Cardiospasm): A Report of Ninety-one Cases. By H. S. Plummer, *Journal of the American Medical Association*, June 29th, 1912, p. 2013.

The author classifies one hundred and thirty cases which have come under his observation as follows:

1. Diffuse dilatation of the œsophagus without anatomic stenosis—ninety-one cases. No gross gastric lesions were found in this group and only five of the patients were of a neurotic type.

2. Severe cardiospasm without diffuse dilatation of the œsophagus—two cases. Both patients had periodic attacks, continuing from three to fourteen days, during which they were able to swallow neither liquid nor solid food. The author thinks that in these cases diffuse dilatation of the œsophagus would ultimately have developed.

3. Cardiospasm without diffuse dilatation, but with gross lesions in the stomach—twelve cases. Of these, two patients had ulcer; two, syphilis; five, carcinoma; and three, suspected but not absolutely demonstrated ulcer.

4. Mild cardiospasm without diffuse dilatation of the œsophagus or gastric lesions—twenty-four cases. Almost without exception these patients were of a neurotic type, and many were distinctly hysterical.

The facts that relatively few individuals of a neurotic type and none with gross gastric lesions were noted in the group having diffuse dilatation of the œsophagus, that diffuse dilatation did not follow the cardiospasm in any of the patients with gastric lesions, and that almost constant evidence of an acquired or congenital asthenia was present in the patients with mild spasm without dilatation or gastric lesions, seem to indicate that these groups were of different origins and not very definitely related.

A description of the instrument—a silk-covered, rubber balloon—and the technique employed in the treatment of such cases, was given by the author in the *Journal of the American Medical Association*, August 15th, 1908.

The results of treatment in ninety-one cases are most astonishing. Seventy-three patients were completely relieved of the dysphagia. The pressure employed in effecting dilatation varied from 500 to 675 mm. of mercury. The latter pressure invariably gave marked relief, and in a majority of cases a complete cure followed. It was the routine practice to give the patients two or three treatments and allow them to go home, with instructions to return if there were any recurrence of the dysphagia. In most of the patients with extreme inanition, one treatment only was needed to effect a complete cure.

Reconstruction of the Bile-ducts. By Arthur G. Sullivan, *Journal of the American Medical Association*, June 29th, 1912, p. 2026.

Sullivan describes a method for the construction of an intra-abdominal sinus for biliary drainage, which may be employed in cases where the common bile duct has been partially or totally destroyed. The technique is, briefly, as follows:

Into the stump of the hepatic duct an elastic rubber tube is inserted for about half an inch, and securely sutured to it with several unabsorbable sutures. The other end of the tube is pushed down into the duodenum through the stump of the common duct, if possible, or if this is not possible, the tube should project through a small incision in the anterior wall of the duodenum about one-half inch into its lumen. The opening in the duodenum should be sufficiently repaired so that the cut edges snugly encircle the tube. At the point where the tube penetrates the intestinal wall, the tube should be firmly anchored to the duodenum with unabsorbable sutures. The duodenal walls are then sutured over it, so that for a distance of about 2 cm. before the tube penetrates into the intestine, it runs in a canal composed of overlapped duodenum. The tube is then anchored with unabsorbable sutures in several places to the duodenum and the gastro-hepatic omentum. In short, the tube is put in with the idea of keeping it *in situ* as long as possible. The great omentum is then drawn up, and a suitable area is selected with which to cover the exposed surface of the tube. This area is traumatized by drawing a dry sponge over it lightly a few times; similar friction is applied to the duodenum and the gastro-hepatic omentum on either side of the tube. The omentum is then placed so as to cover the tube and extend beyond it a centimetre or two in all directions, and is carefully anchored in position by several catgut sutures.

The rubber tube should have a lumen of not less than a quarter of an inch, and should be soft, pure rubber, resilient enough to retain its shape. Should the structures into which the tube must be passed not admit one of this calibre, stretching it along a stiff sound or a long-shanked forceps, thus decreasing its diameter, will make it possible to insert it easily.

This procedure has been successfully carried out upon several animals, the rubber tube eventually freeing itself and passing into the duodenum. Subsequent biliary obstruction did not develop.

Obituary

Dr. D. M. Murray, of Brooklyn, N.Y., was drowned while bathing in Lake Erie, July 21st. Dr. Murray was an expert swimmer, and it is probable that death was due to heart failure. Dr. Murray was the son of Mr. Robert Murray, of Stratford, Ont. He leaves a widow and one child.

Dr. Daniel Muirhead was killed in an automobile accident near North Gower, Ont., July 23rd. The automobile in which Dr. Muirhead was driving with Mr. Norman Cram turned turtle and the doctor was crushed beneath it; death ensued half an hour later. Dr. Muirhead, who was one of the best known physicians in the Ottawa Valley, was about fifty years of age and was unmarried.

Dr. N. B. H. Dean, of Brighton, Ont., died June 28th, in the seventy-second year of his age. Dr. Dean was born in the township of Hamilton, and graduated in medicine from Victoria University at the age of twenty; he then took up a practice at Beaverton, where he remained until the outbreak of the American War. During the war, Dr. Dean served as surgeon in the American army, holding the position of assistant surgeon at Lincoln Hospital and, later, that of surgeon in charge at Fort Strong. At the close of the war, Dr. Dean returned to Canada and entered the Kingston Military College, where he obtained a first-class military certificate. In August, 1866, Dr. Dean again took up his profession and settled in Brighton, Ont., where the greater part of his life has been spent. Dr. Dean was a Knight Templar and a member of the I.O.O.F. and the A.O.U.W. He was keenly interested in all that pertained to education and was popular both as a physician and friend. Dr. Dean is survived by a widow and two sons.

Dr. W. H. Macdonald, of Antigonish, N.S., died at the Homewood Sanatorium, Guelph, July 10th. Dr. Macdonald, who was widely known and highly esteemed by all those who knew him, was born at Antigonish and was the son of Dr. Alexander Macdonald. Dr. Macdonald graduated from Harvard University in 1862; he then went to Antigonish and took up his father's practice.

Here he continued to follow his profession until about eighteen months ago, when he became ill. Dr. Macdonald was in his seventy-eighth year, and is survived by a widow, five daughters and two sons.

DR. FREDERICK C. BOYD, of Kingston, died from tuberculosis, July 5th, in the twenty-fourth year of his age. Dr. Boyd graduated as M.D. in 1911, from Queen's University, where he had previously taken his B.A. degree. Dr. Boyd then went to New York and served as house surgeon in the Columbus Hospital until December, when he was obliged to give up his work on account of ill health.

DR. HUGH WALKER died suddenly at Elsinmore, California, July 13th. Dr. Walker, who was in the forty-first year of his age, was born at Belleville and was a graduate of Queen's University.

DR. HUGH ALEXANDER STEWART, of Portage la Prairie, died July 6th. Dr. Stewart was born in Nairn, Ont., in 1863, and graduated as M.A. from Manitoba University, Winnipeg, and as M.D. from Toronto University; he afterwards took a special course in New York. Dr. Stewart then began to practise his profession in Griswold, Man., where he laboured for thirteen years. Seven years ago, owing to ill health, Dr. Stewart was obliged to retire from his profession and death came after a long and trying illness. Dr. Stewart is survived by a widow and four children.

DR. ROLAND S. DEVLIN, of Montreal, died in the Royal Victoria Hospital early on Thursday morning, August 1st. The death of Dr. Devlin, a young and promising physician, occurred under peculiarly sad circumstances. About a fortnight before, Dr. Devlin was shot by John Shepherd in the Turkisk Bath Hotel, at Montreal, while hurrying to the assistance of Frank McKenna, a bar tender, who was shot and instantly killed by Shepherd. It appears that Shepherd suddenly became insane, as the result of injuries which he received some time ago. It had been hoped that Dr. Devlin would recover, and the news of his death came as a shock to his family and his numerous friends. Dr. Devlin was thirty-two years of age and was born in Kingston, where he received his education, graduating from Queen's University some years ago. After receiving his medical degree, Dr. Devlin took several post-graduate courses in the United States, and the news of his success in passing the Massachusetts state board examination was received by his family on the day following the accident. Although Dr. Devlin had spent much of his time since graduation outside of Canada, he was much liked and highly respected by all the members of the profession in Montreal who knew him.

Dr. G. E. Marshall, of Peterborough, died from heart failure, August 5th. Dr. Marshall was playing in the Central Ontario Bowling Association tournament, and was competing for the Stratton trophy, when, in the midst of a game, he fell to the ground unconscious. Dr. Marshall was born in Cavan in 1864, and graduated from the Detroit School of Medicine in 1897; he then practised for a number of years in Michigan. On his return to Canada, he graduated from Trinity Medical College, and for the past seven years had practised in Peterborough. Dr. Marshall was extremely popular and was a member of many societies, among them being the Canadian Order of Chosen Friends, the Woodmen of the World, the Independent Order of Foresters, and the Peterborough Orange Association. Dr. Marshall was also an enthusiastic bowler and was president of the Peterborough Bowling Association. He is survived by a widow and three children.

Dr. William Fielding Barnes, of New Glasgow, N.S., died from pneumonia, August 5th, in the twenty-fifth year of his age. Dr. Barnes graduated last year from Dalhousie University, and had been practising in Hopewell, N.S.

Dr. T. C. Ward, of Napanee, Ontario, died suddenly, July 27th. Dr. Ward was one of the leading physicians in Napanee, and leaves a widow, three daughters and two sons.

Dr. S. H. Pope, of West Bothwell, Ontario, was found dead, July 30th. Dr. Pope, who was in the ninety-first year of his age, was walking home from Bothwell when he succumbed, death being due to epilepsy. Two daughters and four sons survive Dr. Pope, one of whom, Dr. George Pope, is practising at Bothwell.

Dr. A. F. Lepper died from quinsy at the Rivers Inlet summer hospital of the Bellavalla Mission, B.C. Much of Dr. Lepper's early life was spent in Toronto, and he graduated from the university there. At the time of his death, Dr. Lepper was working at the Bellavalla Mission Hospital, and intended to go out to China in the spring.

Dr. Daniel Meagher, of Montreal, died from heart disease August 10th. Dr. Meagher was staying at Kingston, and was found dead. He was about sixty-six years of age, and was a graduate of Queen's Medical College.

News

THE ANNUAL MEETING AT EDMONTON

The names of the members elected to the Executive Council for the ensuing year are as follows:

Dr. F. G. Finley, Montreal; Dr. J. G. Adami, Montreal; Dr. T. B. Whitelaw, Edmonton; Dr. J. Halpenny, Winnipeg; Dr. R. A. Reeve, Toronto; Dr. R. E. McKechnie, Vancouver; Dr. Octavius Weld, Vancouver; Dr. Kennedy, McLeod, Alta.; Dr. Daniels, St. John, N.B.; Dr. A. I. Mader, Halifax; Dr. Alex. Primrose, Toronto; Dr. P. Conroy, Charlottetown; Dr. Young, Saskatoon; Dr. E. Archibald, Montreal; Dr. H. B. Small, Ottawa.

The Finance Committee was elected at the last meeting of the Executive Council, and the names of the members are as follows:

Dr. F. G. Finley, Montreal; Dr. J. G. Adami, Montreal; Dr. Edward Archibald, Montreal; Dr. H. B. Small, Ottawa; Dr. Young, Saskatoon; Dr. A. Primrose, Toronto; Dr. R. E. McKechnie, Vancouver; Dr. A. I. Mader, Halifax.

It was resolved that the Montreal members should form a sub-committee for the transaction of routine business.

The applications of the Medical Societies of Nova Scotia, New Brunswick, Saskatchewan, and British Columbia, for affiliation with the Canadian Medical Association, were granted by the Executive Council. There remains only the Province of Prince Edward Island which is still unaffiliated.

The place of meeting for 1913 is London, Ontario; president-elect, Dr. A. McCallum, Professor of Medicine in London University.

The resignations of Dr. Edward Archibald as general secretary, and Dr. H. B. Small as treasurer, were accepted by the Executive Council with regret. Both of these officers explained that the large increase in the amount of work, arising out of the establishment of the JOURNAL and the increase in membership, had been the only cause of their feeling obliged to tender their resignations.

In his annual report the general secretary suggested that as the work had grown so largely in the past two or three years, it would be advisable to appoint a salaried official to act as secretary and treasurer, and also as assistant to the editor, Dr. Macphail; one who would be able to devote a considerable portion of his time to the association work. This recommendation was cordially approved by the Executive Council, and Dr. W. W. Francis, of Montreal, was appointed. It was left to the Finance Committee to settle the details of his work and the remuneration that should be attached to this threefold position.

IT is probable that, when the new Toronto General Hospital, which is being built on College Street, is completed, the present hospital building will be retained as a hospital for the people living in the eastern part of the city.

DR. WILLIAM SLOAN, who for the past fifteen years has been the physician at the Central Prison, Toronto, has resigned. Dr. Sloan, who is eighty years of age, will be succeeded by Dr. James Algie.

DR. J. W. RUSSELL has been appointed associate coroner for Toronto.

THE new wing of the Toronto Isolation Hospital was opened July 13th. This wing, which provides accommodation for one hundred and twenty-five patients, was commenced three years ago and has cost about one hundred thousand dollars. It is connected directly with the old hospital building by an underground passage, and it is intended chiefly for patients suffering from diphtheria. In addition to the new wing, alterations and improvements are to be made to the other buildings of the hospital.

THE twenty-second annual meeting of the directors of the Jubilee Hospital at Victoria, B.C., was held June 28th, 1912. During the past year the hospital has been filled to its utmost capacity, and the public wards have been greatly overcrowded. One thousand four hundred and sixty patients have been treated, that is two hundred and eight more than were treated during the preceding year. An effort is being made to build a new hospital, and one hundred and five thousand dollars towards the amount required has already been collected. It was decided at the meeting of the directors to ask the city council to submit a by-law to the people of Victoria for two hundred thousand dollars to assist in the erection of the suggested hospital.

At a meeting of the Port Hope town council, which took place June 8th, Dr. G. A. Dickinson was appointed medical health officer for Port Hope.

Two thousand two hundred and thirty-nine children were examined during the month of June in the schools of Toronto. Three hundred and eighty-five only of these children were found to be normal and free from physical defects.

Dr. H. W. Hill, director of the investigation into and the suppression of epidemic diseases in Minnesota, has been appointed director of the London College of Preventive Medicine. The college was erected some years ago, and was previously known as the Hygienic Institute.

A meeting of the South Ontario and Durham Medical Association took place at Oshawa, July 12th. On this occasion an interesting address was given by Dr. Starr, of Toronto, on "The advantages of using metal splints on fractured limbs."

The opening of the hospital at Penetanguishene, Ontario, took place July 16th.

The city architect of Toronto has been authorized to prepare plans for the erection and establishment of a municipal abattoir and cooling plant.

Over seven hundred cases of typhoid fever have been reported in Ottawa. The cause of the outbreak appears to be a break in the intake pipe by which the drinking water has been contaminated.

During the month of June thirty-five patients were admitted to the Oshawa hospitals; twenty-eight patients were discharged, one death and one birth occurred.

Dr. J. N. E. Brown, of Toronto, has been appointed superintendent of the General Hospital at Toronto. Dr. Brown was formerly superintendent of the Toronto General Hospital and for the last two years has been the Secretary of the American Hospital Association.

Owing to the lack of financial support, it has been found impossible to establish the proposed hospital at Windsor, Ontario. A strong desire that a general hospital might be built was expressed last year, but the committee has not been able to collect the necessary funds.

Dr. James Douglas, of New York, has donated two thousand five hundred dollars for the purpose of providing, for the next two years, a lecturer in pharmacology and therapeutics at Queen's University, Kingston.

A simple device for testing milk is used by Dr. Hastings, the medical health officer for Toronto. A sample of the suspected milk is drawn up from the can by a small pump, the mouth of which is covered by a cotton wool disc. This disc gathers up all impurities. In future, all milk which is found to be impure and unfit for consumption will be coloured pink by means of a harmless dye and will be labelled "condemned." This will make it impossible for dealers to sell milk thus condemned.

Two cases of small-pox have been reported in Montreal. The patients were removed at once to the small-pox hospital.

Dr. Pominville has been appointed physician at St. Vincent de Paul Penitentiary, Montreal, to succeed Dr. Allaire.

Dr. W. E. Ogden has severed his connexion with the National Sanitarium Association at Gravenhurst, and leaves in September for further medical work abroad.

At a meeting of the health and relief committees of Regina, which took place July 9th, it was decided that a monthly health bulletin should be issued as a means of educating the people concerning the regulations of the department of public health and concerning the best methods of dealing with different nuisances. The medical health officer also stated on this occasion, that arrangements had been made with the government whereby monthly reports of vital statistics would be issued.

Dr. E. B. Oliver has been appointed medical health officer for Fort William.

A wing, consisting of four stories, is to be added to the Kingston General Hospital. The building is to be commenced at once and, it is hoped, will be completed before the winter.

The plans for the New Westminster city hospital have been approved. The estimated cost of the new hospital is two hundred thousand dollars.

The building which was used as the Calgary small-pox hospital was burned down July 8th.

Dr. C. E. Arthur, the medical health officer for Nelson, B.C., in his report for the quarter ending June 30th, 1912, states that "never before have there been so many cases of infectious diseases as at present." Ten cases of mumps, five cases of measles, eight cases of German measles, and nineteen cases of scarlet fever have been reported. All the cases of scarlet fever have occurred in children under twelve years of age. As a means of preventing the further spread of the disease, the moving picture shows have been forbidden to admit children under this age. There is no isolation hospital in Nelson in which cases of infectious disease may be quarantined, and many instances have occurred in which the quarantine regulations have been disobeyed, or in which the case has not been reported at all. When the new hospital is completed, it is proposed to use the present building as an isolation hospital.

Dr. J. O. Lachapelle has been appointed surgeon of the North-West Mounted Police at Dawson, Yukon. Dr. Cuthbertson has been appointed territorial medical health officer.

The children's hospital at Winnipeg was formally opened by His Royal Highness the Duke of Connaught, July 17th. The hospital contains, at present, eight beds, but it is hoped in the near future to increase this number to one hundred and twenty.

During the month of June one hundred and sixty-nine patients, suffering from tuberculosis, were admitted to the Royal Edward Institute. Sixty deaths occurred from the disease during the month.

The following cases of infectious diseases are reported by the medical health officer of St. John, N.B. During the quarter ending June 30th, 1912, six cases of diphtheria, fourteen cases of scarlet fever, seven cases of typhoid fever, one case of measles, one case of variola, and thirty-four cases of tuberculosis, occurred. The total death rate was 18·19, which is slightly in excess of that for the preceding quarter, 17·18. The increase is due to the greater number of deaths which have occurred from tuberculosis. There is no institution in St. John in which cases of advanced tuberculosis may be isolated, and the need for such an institution becomes more and more imperative as time goes on.

The King Edward Memorial Hospital at Winnipeg was opened by His Royal Highness the Duke of Connaught, July 14th. The Memorial Hospital is to be devoted to the treatment of cases of advanced tuberculosis, and is intended chiefly for those living in the city. Incipient cases will be treated elsewhere. The hospital contains fifty-eight beds. His Royal Highness also laid the foundation stone of the King George Hospital for infectious diseases.

Dr. S. Boucher has been appointed medical inspector of civic employees in Montreal.

Two more cases of small-pox have been reported in Montreal.

Two cases of leprosy were recently discovered in Montreal and one in Toronto. All three of these cases have been deported to a leper's island in the Pacific Ocean.

The plans have been prepared for a small-pox hospital which is to be erected at Saskatoon.

As a result of the recent outbreak of typhoid fever in Ottawa, a new system of water supply is to be established. This is to consist of a mechanical sand filtration plant on Lemieux Island in the Ottawa River, which will be connected with the pumping station in Ottawa by means of a tunnel under the river. The cost of the tunnel is estimated at three hundred thousand dollars, and that of the plant at about seven hundred and fifty thousand.

A NEW quarantine hospital is to be erected at Grosse Isle, Que.

SEVEN hundred dollars have been contributed by the Young Women's Auxiliary at Waterloo towards improvements which are being made in the nurses' home. During the month of June fifty-five admissions were made to the hospital at Waterloo and forty-four patients were discharged.

THE establishment of a hospital for the treatment of tuberculosis at Union, Ontario, is under consideration. It is suggested that the site should be provided by the county of Elgin, and that the hospital should be built and maintained by the Daughters of the Empire.

THE sum of two thousand dollars has been subscribed to the Welland County General Hospital by Dr. Baruch Tucker, of Allanburgh, Ontario. The money is to be used for the erection of an additional wing to the hospital, or for a separate building, in which patients suffering from tuberculosis may be treated.

DR. A. S. ESTEY, medical health officer of Calgary, has resigned.

A CONFERENCE of the Saskatchewan Medical Association will be held at Moose Jaw, September 3rd, 4th, and 5th. It is intended to affiliate the association with the Canadian Medical Association, as it is thought that it will thus be placed in a position of greater usefulness to the profession.

AT a meeting of the Halifax Board of Health, which took place August 6th, it was recommended that an abattoir be established.

AN addition is being made to the Nova Scotia Hospital at Dartmouth. The new wing will be completed next spring, and will provide for the accommodation of patients suffering from tuberculosis.

The monthly meeting of the Victoria Hospital at Halifax took place August 5th. During the month of July, thirty-eight patients received treatment, fifteen patients were discharged, and one died. It was decided that the regulations concerning the admission of emergency cases should remain unaltered.

The regulations of the new Public Health Act, which was passed at the last session of the Ontario legislature, were formally approved of by the government August 8th.

During the first week in August, ten cases of typhoid were reported in Toronto; two cases have occurred in Peterborough.

Owing to the increase in the number of cases of typhoid in Ottawa, the Waller Street School has been converted into an emergency hospital; it provides accommodation for forty-five patients.

A local hospital has been established at Armstrong, Ontario.

An addition is to be made to the main building of the Hospital for Sick Children at Toronto; the addition will take the form of a wing four storeys in height, and will cost about one hundred and twenty thousand dollars.

The increased cost of living has led the medical association of Berlin and Waterloo, Ontario, to raise the fees charged for professional visits; in future, the charge per visit is to be from $1.50 to $2.00.

The new wing which is being added to the Berlin and Waterloo Hospital will be completed early in October. The addition, which will contain twenty rooms, will be a material help to the hospital, which has been greatly overcrowded for some time past. An operating suite, consisting of four rooms, has also been provided.

A special course of instruction is being given by Dr. J. W. S. McCullough, chief health officer for the province of Ontario, and Dr. John Amyot, who is in charge of the provincial laboratory, to the newly appointed district officers of health. The course will be concluded with examinations at the end of the year.

The infantile death rate in Montreal is an unfortunately high one, and exceeds that of any other city on this continent. Consequently, one is particularly glad to know that a baby hospital is to be established in Montreal. The hospital will contain one hundred beds and is intended only for infants of less than two years of age.

A three-storeyed hospital is to be established at Sapperton, B.C. The sum of two hundred thousand dollars has been set aside for the purpose.

A meeting of the medical representatives of the various provinces will be held in Ottawa in October; the medical reciprocity bill will then be discussed.

During the month of June, two hundred and ninety-eight patients received treatment in the Regina General Hospital; one hundred and fifty-nine patients were discharged; and nine deaths and fifteen births occurred. In the isolation hospital, twenty-seven patients received treatment and fourteen were discharged.

Small-pox is reported to be prevalent in Ancienne and in Jeune Lorette, Que. The type of disease is mild and measures to prevent its further spread are being taken by the provincial health department.

An isolation hospital is to be established at Renfrew, Ontario. An addition is also to be made to the Victoria Hospital.

A case of small-pox has been reported from the Franciscan Monastery, Montreal. The patient was removed at once to the isolation hospital.

The first International Congress of Comparative Pathology is to be held at the Faculty of Medicine, Paris, October 17th to October 23rd, 1912. The president is Dr. Roger, professor of experimental and comparative pathology of the University of Paris; and the general secretary is Monsieur Grollet, 42 rue de Villejust, Paris. Among others the following subjects will be discussed: tuberculosis, Professor Calmette, Professor Vallée, and M. Chaussée; cancer, Professor Menetrier, Dr. Clunet, and Professor Borrel; small-pox and vaccination, M. Chaumier, M. Carrière, and M.

Tomarkin; parasites peculiar to men and animals, M. Weinberg, Professor Deve, Professor Bodin, Professor Perroncito, and M. Morot; nervous affections, Dr. Marchand and Professor Petit; hydrophobia, Dr. Delaunay, Dr. Remlinger, and Professor Babes; comparative study of cirrhoses, Dr. Garnier and Dr. Ravenna; international organization of the struggle against foot-and-mouth disease, Professor Moussu; international organization of the struggle against melitococcy, M. Ch. Dubois; vegetable pathology, M. Blaringhem, Dr. Larcher, and M. Louis Dop.

Canadian Literature

ORIGINAL COMMUNICATIONS

The Canadian Journal of Medicine and Surgery, August, 1912:

Medical journalism in years gone by . . W. A. Young.

Dominion Medical Monthly, August, 1912:

Some aspects of neurology to general practice
W. A. Turner.
Tetanus . . . . A. Moir.

The Canadian Practitioner and Review, July, 1912:

Graves' disease . . . . J. W. Crane.
Impressions of the Ninth International Red
Cross Conference . . . G. Sterling Ryerson.
The international collective investigation of
Ozœna . . . . . . D. J. Gibb Wishart.
Hospital clinics and medical progress . . John Hunter.
Continuous drainage in œdematous conditions
J. B. Fraser.
Medical thoughts, facts, fads, and foibles . J. S. Sprague.

The Western Medical News, May, 1912:

Some recent advances in medicine . .	J. B. Marvin.
Cæsarean Section	E. Gustav Zinke.

L'Union Médicale du Canada, July, 1912:

Hémoptysies d'origine nerveuse .	Dr. Bourgouin.

Le Journal de Médecine et de Chirurgie, July, 1912:

L'enseignement de l'Ophthalmolgie à Londres	Gaston Morin.

The Public Health Journal, July, 1912:

The more important causes underlying the heavy infantile death rate in large cities, and the benefits to be derived from the establishment of milk dépôts . .	A. D. Blackader.
Child Welfare Exhibitions and their value .	J. G. Adami.
School Buildings	C. P. Band.
Municipal Meat Inspection . . .	T. E. Munce.
How to get and to keep competent health officers: the sanitary inspector .	Thomas Watson.
What the federal government might do to assist in the control of tuberculosis	D. Macdougall King.
Town planning from an architect's point of view	C. P. Meredith.

Medical Societies

NOVA SCOTIA MEDICAL ASSOCIATION

The fifty-ninth annual meeting of the Nova Scotia Medical Society was held in the Academy Hall at Truro on Wednesday and Thursday, July 3rd and 4th. After an address of welcome delivered by the mayor of Truro, the president, Dr. H. V. Kent, gave a very able resumé of the work done by medical inspectors in schools in England, in the United States, and in Canada. Several interesting papers were read, among them one on the "Sewage Problem," by Professor T. A. Starkey, of McGill University, Montreal, and one by Professor Harris, of Dalhousie University, entitled "A study of certain vital rhythms." On Thursday evening a banquet was given to members of the society by the physicians of Truro and Colchester County.

PRINCE EDWARD ISLAND MEDICAL ASSOCIATION

The annual meeting of the Prince Edward Island Medical Association took place on Wednesday, July 10th, in the Board of Trade Rooms, Charlottetown. The meeting was in all respects a most successful one.

The following members of the association were present: Drs. Ross, McEwen, Alexander McNeill, A. A. McLellan, J. C. Ballum, J. A. MacPhee, J. C. McDonald, Conroy, Warburton, Jenkins, Carruthers, H. D. Johnson, Dorsey, MacMillan, Yeo, Dewar, and A. A. Macdonald.

Papers and case reports were read as follows: "Notes on General Practice," by Dr. Alexander McNeill; "Drowning: Results of experiments on dogs," by Dr. Ross; Case Reports, by Drs. Conroy, Carruthers, A. A. Macdonald, Yeo, and Dewar. Then followed a discussion upon "The good of the association," opened by Dr. MacMillan. Several resolutions were passed, including one requesting the government to take up the matter of meat inspection. An interesting address was delivered by the president, Dr. Mc-

Lellan. The election of officers for the following year resulted as follows: president, Dr. A. A. Macdonald; vice-president, Prince County, Dr. J. F. McNeill; Queen's County, Dr. G. F. Dewar; King's County, Dr. J. D. McIntyre; secretary, Dr. W. J. MacMillan, (reëlected); treasurer, Dr. P. Conroy (reëlected); executive committee, Dr. P. C. Murphy, Dr. A. Murchison, and Dr. A. Stewart; auditing committee, Dr. G. F. Dewar and Dr. H. D. Johnson. The members of the Medical Council elected by ballot were: Dr. Conroy, Dr. Warburton, Dr. Jenkins, Dr. Carruthers, Dr. H. D. Johnson, Dr. A. McNeill, and Dr. McEwen.

LAMBTON MEDICAL SOCIETY

The Lambton Medical Society held its monthly meeting at Sarnia, on Wednesday, July 10th. In the morning a clinical meeting was held at the General Hospital, when cases were presented by Dr. Wilkinson, Dr. Bell, Dr. Henderson, and Dr. McDonald. In the afternoon a paper on "Exophthalmic goitre" was read by Dr. McDonald. The next meeting of the society will take place in October at Petrolea.

SASKATCHEWAN MEDICAL ASSOCIATION

The Saskatchewan Medical Association will meet in Moose Jaw, September 3rd, 4th, and 5th, under the presidency of Dr. S. W. Radcliffe. The secretary-treasurer of the association is Dr. Arthur Wilson, of Regina.

NEW BRUNSWICK MEDICAL SOCIETY

The thirty-second annual meeting of the New Brunswick Medical Society, held in Moncton, July 16th and 17th, was one of the most successful in the society's history. Dr. C. T. Purdy, Moncton, presided.

The attendance was large and representative, practically every section of the province sending members. A particularly pleasant feature was the presence of members of the profession from Boston, Chicago, Montreal, and Charlottetown, each of whom contributed towards the programme.

The Moncton members were most hospitable. The mayor of the city welcomed the society to Moncton, and the local committee of arrangements were untiring in their efforts to make every one's stay a pleasant one. An enjoyable dinner was held at the Brunswick Hotel on the evening of the 16th. A large amount of business was discussed, among the most important matters being: work in connexion with medical inspection of schools; the prosecution of the work in connexion with the establishment of municipal institutions for the care of advanced cases of tuberculosis; the recommending that a provincial medical health officer should be appointed; discussion on the control of tuberculosis in rural districts, etc.

The following papers were read: Dr. G. R. J. Crawford, St. John, "Tubercular Laryngitis"; Dr. D. Townsend, River Glade, "Tuberculosis: its Diagnosis and Treatment"; Dr. F. Tooke, Montreal, "Some Complications Attending the Extraction of Senile Cataract."

DISCUSSION: "The Treatment of Infantile Diarrhœa," Dr. T. Walker, St. John; Dr. G. C. Van Wart, Fredericton; Dr. J. D. Lawson, St. Stephen.

Dr. G. G. Meloin, St. John, "The Bacteriology of Typhoid and its Allies"; Dr. Wm. Hutchinson, Montreal, "Tuberculosis of the Genito-Urinary Tract"; Dr. G. L. Tobey, Jr., Boston, "Acute and Chronic Suppuration of the Middle Ear: Complications and Treatment"; Dr. Murray MacLaren, St. John, "Prostatectomy."

DISCUSSION: "The Control of Tuberculosis in Rural Districts"; Dr. F. L. Wetmore, Hampton; Dr. G. W. Fleming, Petitcodiac; Dr. S. C. Murray, Albert.

Dr. J. Clarence Webster, Chicago, "Suggestions as the result of twenty years' experience in Abdominal Surgery"; Dr. W. R. MacAusland, Boston, "Joint Infection" (with lantern slide illustrations); Dr. H. D. Johnson, Charlottetown, "The Eye: its Importance to the General Practitioner"; Dr. A. F. Emery, St. John, "Blood Pressure: the clinical value of the Sphygmomanometer"; Dr. A. B. Atherton, Fredericton, "Report of two cases of Abdominal Surgery."

DISCUSSION: "Cæsarean Section," Dr. A. R. Myers, Moncton; Dr. W. W. White, St. John; Dr. J. Clarence Webster, Chicago.

Officers for 1912-1913, were elected as follows: president, Dr. G. R. J. Crawford, St. John; first vice-president, Dr. G. C. Van Wart, Fredericton; second vice-president, Dr. G. W. Fleming, Petitcodiac; recording-secretary, Dr. J. S. Bentley, St. John; corresponding-secretary, Dr. F. H. Wetmore, Hampton; treasurer, Dr. T. Walker, St. John; trustees, Dr. T. E. Bishop, St. John; Dr. H. E. Gillmor, St. Martins; Dr. D. D. McDonald, Dorchester.

Dr. Murray MacLaren, St. John, was elected representative from New Brunswick on the Board of Management of the Victoria Order of Nurses of Canada, and Drs. W. W. White, St. John, and A. B. Atherton, Fredericton, on the Dominion Medical Council.

The society will meet in St. John, July 15th and 16th, 1913.

PRINCE ALBERT MEDICAL ASSOCIATION

The Prince Albert Medical Association was formed August 2nd. The election of officers resulted as follows: president, Dr. J. R. Matheson; vice-president, Dr. Stuart Reid; secretary-treasurer, Dr. F. W. Fourney; executive committee, Dr. Labrecque, Dr. Strong, Dr. MacMillan, and Dr. Moreau.

The formal opening of the sanitarium for the treatment of nervous diseases, which has been established at Barrie, Ontario, took place on Saturday, July 6th. Simcoe Hall, which is the name that has been given to the sanitarium, is beautifully situated on the southern hills overlooking the bay and the town of Barrie. The grounds are composed of three terraces, which lead from the building to a large trout pond; they also comprise a bowling green and a tennis court. The building itself is beautifully furnished, and contains fourteen rooms for women patients and twelve for men undergoing treatment. Dr. W. C. Barber is the medical director and among the consulting physicians are the following names: Drs. W. P. Caven, McPhedran, Bruce, Cameron, Machel, McEwen, Adam Wright, Carveth, A. A. MacDonald, H. J. Hamilton, H. Anderson, J. T. Fotheringham, C. K. Clark, J. M. Foster, R. W. Bruce Smith, J. G. Bowles, of Toronto; Drs. Edward Ryan, James Third, and Garret, of Kingston; Drs. J. P. Vrooman, of Napanee; Olmstead, of Hamilton; H. A. McCallum, of London; Professors Barker and Cullen, of Johns Hopkins University, Baltimore; Dr. Carlford, of the Neurological Institute, New York; Dr. Campbell, of Bradford, and Dr. Lewis, of Barrie.

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THE THERAPEUTICS OF TO-DAY

BY A. D. BLACKADER, M.D.

Professor of Therapeutics, McGill University

Members of the Canadian Medical Association:

Friends in council,—

PERMIT me, at the outset of my remarks, to express my appreciation of the honour involved in the request of your committee that I should deliver the Address in Medicine at this meeting. I accepted the invitation with hesitation, for although I felt it was an honour that comes but once in a lifetime, I was conscious of the associated responsibility, and felt it to be an onerous task to present for your consideration thoughts and facts which should be worthy. I was not unmindful, also, of the many brilliant addresses to which in previous years you have listened. "What can a man do that cometh after the King, even that which hath already been done?"

In my reading some weeks ago, I came across a statement, made by an eminent English surgeon, to the effect that although surgery during the past fifty years had been advancing by leaps and bounds, general medicine had been standing comparatively still, and therapeutics remained nearly as empirical as it was a century ago. The statement revealed such a lack of appreciation of the intense investigations carried on in our medical field, and of the great advances made in therapeutics during this period that it startled me. Nevertheless, I had to admit that the statement was in accordance with a popular impression, and it led me to choose as the subject for our consideration to-day, the present outlook in therapeutics as contrasted with that of the past.

The Address in Medicine delivered in Edmonton, Alberta, at the forty-fifth annual meeting of the Canadian Medical Association.

To heal the sick, to relieve the suffering, and to conserve life and energy, are admitted by all to be the chief ends of our profession, nevertheless it must be a matter of surprise to the laity to note that in the curriculum of our medical schools, the teaching of pure therapeutics, of which pharmacology is only a branch, does not hold, at the present day, the prominent place which, from an *a priori* point of view, it should hold; indeed, in some schools it is altogether displaced, owing to the prominence given to the necessary, but, to some extent, subordinate branches of anatomy, physiology, chemistry, and bacteriology. When I use the term subordinate, I by no means desire to underestimate the vital importance of these subjects, but only to indicate that while as scientific studies they are of great interest and importance to the biologist, and every physician should be a biologist, nevertheless, for us as physicians, these studies must be regarded only as the foundation structures on which the great temple of the healing art, a perfect system of therapeutics, is gradually to be raised. And yet, it is admitted by all that, in the past, in attempting to raise this most complicated structure too rapidly, the mistake was made of not giving sufficient study to these foundational subjects. With but a slight grasp of anatomy, with mystical ideas of physiology, and with an absolute lack of any knowledge of chemistry and bacteriology, and of the causes of disease, our forefathers attempted to solve the mysteries of sickness and death by philosophical imaginings and remedial agents, of which they knew naught of the harm, and little of the good, that could be effected by them. Therapeutics, in these o'den times, has been compared to the gropings of a blind man feeling his way with uncertain steps, now turning this way, now that, stumbling and tumbling, occasionally stopping altogether, but making little definite progress. The thirty or forty centuries of imaginative and empirical medicine, previous to the beginning of the past century, must, from our standpoint, be regarded as all but useless, and characterized by a very slow, irregular, and uncertain development of mere empirical therapeutics. It was a period which at its close had nothing to bequeath to the present but a long list of drugs, the great majority of which are now regarded as useless; a few only had a definite value, and these, owing to the very imperfect knowledge of their exact action, were often used to the disadvantage of the patient; and although physicians of real merit lived during this period, their medical skill was an art and, therefore, personal, and could only to a slight extent be passed down to their successors.

It is a matter for congratulation that about the beginning of the nineteenth century this blind, unscientific empiricism received shattering blows from two quarters. The revelations made to the profession by Skoda, in Vienna, regarding the natural course of disease and its tendency to spontaneous recovery revealed the hitherto hidden powers of the *vis medicatrix naturæ*, while the gradual development of experimental physiology, pathology and pharmacology slowly and surely laid the foundations of modern medicine, but in so doing destroyed the flimsy structure of therapeutics which had been erected by empiricism.

This period, from the beginning till towards the close of the nineteenth century, has been spoken of as the period of *skepticism* in therapeutics, for it must be acknowledged that during its greater part therapeutics was undoubtedly discredited by almost all the great teachers of internal medicine. Nor is it difficult to find the reason for this. Physicians, aided by the revealing eyes of the microscope, gradually obtained a clearer insight into the complexity of life's processes and into the interaction of the various systems whose harmonious activities constitute a living human being. With the advance, also, of pathological anatomy and an increased knowledge of the many lesions interfering with function and producing derangement of the physiological processes of the body, a deepening sense of the incapacity of drugs to overcome the evils thus wrought slowly overwhelmed the profession. This pessimistic view of the value of drugs is well illustrated by Sainsbury's dialogue between the pathologist and the physician.

"Hail, Professor, the dead salute thee! You were this very moment in my mind and I was wondering."

"Indeed, and the matter of your wonderment?"

"This case which you have sent me, and the physician's faith in drugs."

"Nay, the case came, and had, in fact, long been journeying in your direction, and my endeavour was but to stay the traveller's steps."

"Ah! The apothecary tells me there is a long bill for drugs, digitalis, strophanthus, sparteine, and Heaven knows what more, for I could not outstay the tale of the remedies employed. Friend, what had you in mind? Could you but have seen what was the real task before you? This aortic valve, which you rightly diagnosed to be narrowed, it scarcely admits a thin cedar pencil, and the valves, if you can call them such, fused and thickened as they are, and hard as a piece of Roman mortar: they do not look exactly amenable to treatment; did you think to soften them? And this heart muscle, its fibres stretched and degenerate, what hope was there there? Doubtless you proposed to make new fibres to overcome the destruction. What a commentary upon drug dosing is here!"

"And the other case, which died so unaccountably, you are reported to have said, which lived so unaccountably you might have said, for both kidneys were converted into mere membranous sacs. Again the drug list was not spared, and to what end? Would you have more, look around you, for time, not argument, is wanting. There they stand by shelvefuls, long rows of protests against this therapeutic madness, protests which shall last if my art can preserve them. Somewhere, I presume, the physician keeps a conscience, and in time, it is my hope these should bring conviction."

This gradually increasing discredit into which, among thoughtful men, drug therapeutics was slowly sinking, was only to a slight extent relieved by the rapidly increasing knowledge which experimental pharmacology afforded regarding the actual physiological action of drugs. Physicians still mistook symptoms for the actual disease, and because one or two drugs were recognized as possessing a specific curative action, as quinine in malaria and mercury in syphilis, the over-enthusiastic therapeutist demanded of all his drugs this specific power to cure. Quinine was given in large doses to lower the pyrexia in all forms of infection, and aconite and veratrum were administered to slow the pulse. It was hoped that when the symptoms were overcome, the fever lowered, and the pulse slowed, the disease would be cured. We smile now when we think of such folly, and recognize how futile such attempts must ever be. Towards the close of the last century, however, new hopes were aroused and a new therapy born. The bacteriological investigations of Pasteur penetrated the mysteries of disease, and unfolded its hidden causes; and his successful studies of anthrax infection, and of the immunity conferred upon animals by the prophylactic injection of small amounts of its weakened cultures, afforded to physicians their first insight into the working of the marvellous defensive powers of the living organism, and indicated to the therapeutist a path along which he might be able to work in coöperation with nature. In this research a long array of master minds has ever since been working. The future alone will be able to estimate clearly how great has been the boon conferred upon humanity by the painstaking investigations of Metchnikoff, Nutall, Roux, Koch, Behring, Ehrlich, Sir Almroth Wright, Adami, and many others, both in this country and in Europe.

As a result of these investigations we have learned that the natural defensive powers of the system exist in varying amount in the blood of every individual in two forms: as soluble, complex, chemical bodies which are held in solution, and as certain motile white cells, the so-called leucocytes or phagocytes.

Not only do both these curative forces exist preformed in the blood, but they both become immediately augmented when infection takes place; and the ultimate issue, whether in spontaneous recovery or in the death of the tissue or individual, depends upon the degree of this response, and upon the competency of the curative principles evoked to reach and suppress the infecting agents and destroy their poison. With the recognition of these conditions, innumerable attempts were made to utilize this knowledge and to increase artificially the amount of these curative substances in the blood, both as a means of prophylaxis in individuals exposed to infection, and as a therapeutic agent in those actually infected.

It had early been noted that the inoculations of animals with gradually increasing doses of certain soluble toxins, notably the diphtheria toxin, resulted not only in the development in the blood serum of that animal of a greatly increased tolerance for the poison, but also that if some of that serum were mixed in a test tube with a solution of the toxin, the latter became innocuous and could be injected into a healthy animal without the development of any poisonous symptoms. Then Behring and Roux demonstrated that a strong serum developed in a horse from repeated injections of diphtheria toxin, if injected into a guinea pig shortly after the introduction of a fatal dose of diphtheria toxin, prevented the fatal termination. Shortly after this, the serum was used in man. To those physicians who watched its use for the first time, its marvellous promptness and efficiency must have conveyed a sensation similar to that of witnessing a miracle. And the hope became general that it was merely a question of time before sera would be produced which would prove curative in all infections.

This hope, as we unfortunately know, has not up to the present been fulfilled as completely as was at first expected. Nevertheless, how grateful should the world be to the researches which have already given us the several powerful antitoxic sera which we possess to-day.

The explanation of this partial lack of success lies in the fact that microörganisms affect the body and produce disease in different ways. In some cases, as in diphtheria, it is in the toxins that are produced that the chief danger of the individual lies, and the physician's aim must be to neutralize this poison; in other cases it is the bacteria themselves that appear to work the mischief, and their destruction is all important. Not infrequently these bacteria acquire a considerable potential advantage against their host by withdrawing into situations to which curative agents can obtain only imperfect access, as in localized infections and abscesses; in other instances they obtain a still greater advantage by developing that remarkable state of "fastness" in which they present a most effective resistance to ordinary immunity principles and injurious chemical agents.

It was a great disappointment to our hopes when Sir Almroth Wright's apparently too optimistic statements regarding the opsonins also failed in their general application. To obtain by means of a culture-growth a knowledge of the precise microörganism that is causing a patient's malady, and to learn by examination of the blood the exact state of the antagonizing forces in his blood cells and serum, and with the knowledge so obtained to coöperate with nature in reënforcing her resistant forces and checking the development of the infecting organism, is a consummation devoutly to be wished. Along this path of coöperation with nature, in my opinion, will yet lie the most brilliant therapy of the future; but there is still an infinitude to be learned, for the mystery surrounding the antibodies has as yet scarcely been fringed.

There is another line along which therapy has made much advance. It is scarcely three decades since Gull and Ord established the relationship between myxœdema, cretinism, and the absence of thyroid secretion. Quickly following this discovery, Murray obtained brilliant therapeutic results by the internal administration of an extract made from the thyroid gland itself. Since then physiologists have devoted much attention to what has been termed the internal secretions, and it is now regarded as certain that special glandular cells, e.g., those of the thyroid and parathyroids, the suprarenals, the pituitary body, the testicles and ovaries, and perhaps the thymus, have the property of secreting active products which play an important part in the functional activities of the body. This study is still in its infancy, but I believe that in time the prophecy of Starling will prove true, and that future investigations of the various hormones of the body will afford us knowledge that may enable us so to modify these functions as to acquire considerable control over the workings of the human body.

With the record of such persevering investigation and brilliant accomplishment in the recent past, and with the well-founded hope that the not distant future has still greater things in store for us, is it right that therapeutics to-day should still be treated with a sneer, and be refused a place among the scientific branches of our profession? The answer, in my opinion, depends upon the stand taken by our profession as a body in discarding the imaginative empiricism of the past, and replacing it by scientific, rational therapeutics.

Rational scientific therapeutics to-day demands that treatment be directed, not to mere symptoms, but to the underlying cause, whether this be of the nature of an infection by a specific microorganism, or of an overactivity or deficiency in some internal secretion, or whether it arise from an interference with normal physiological processes in the body due to an infraction of the laws of health. It demands from the physician a knowledge of normal structure and function, and of the changes which may be wrought in both by disease, so that he may be able to trace clinical symptoms back to the histologic alterations which produce them, and thus distinguish between the pathological process and its mere symptomatic manifestations.

Scientific therapeutics demands an exact diagnosis, so far as such is possible by instruments of precision and by modern biologic methods, and emphasizes the necessity that this diagnosis be made early. The great importance of time is well illustrated in the case of pulmonary tuberculosis. How much can be done by the physician to check the further progress of the disease if the diagnosis be made promptly, and how futile therapy becomes if the disease be unfortunately labelled as influenza, bronchitis, or malaria, till an extensive invasion has occurred! How important to interpret promptly the early manifestations of rheumatic infection in a child, and immediately to remove, so far as may be practicable, all possible strain from the cardiac tissues by absolute rest in bed, by the avoidance of excitement, by a carefully regulated dietary, and by specific treatment! In the infections of diphtheria, cerebrospinal fever, and poliomyelitis, how the hours count!

Nay more, of how much greater value to our patient might our therapy be, if we could always recognize the stage of *lessened resistance*, and prescribe suitable measures for the restoration of the weakened defences!

Scientific therapeutics to-day demands a knowledge as exact as possible of all the forces which may be utilized by the organism in its struggle against disease, and expects a rational employment of them.

In the first rank among these forces the physician has now learned to place the natural defensive and restorative powers of the system. These powers he must always respect and conserve, and, when necessary, step in and assist; and it must be remembered that in her struggle with disease nature relies not only on her phagocytes and her antigens, "those charmed bullets," as Ehrlich calls them, which strike only the disturbing toxins, but makes use also of other measures of defence. She demands efficient rest for the diseased organ or system and emphasizes its importance by bringing on pain and distress on attempted action. She calls for an increase of cellular activity and, in some cases, induces fever which stimulates the chemical processes in the body, favours the development of the various antibodies, and, if not too high and too prolonged, definitely assists in the defence against microbic invasion. She forces the elimination of all foreign, irritating, and toxic material, and when necessary she compels other cells or organs to bear the strain in a vicarious action.

All these measures of defence, however, require to be watched carefully, and when excessive to be controlled by the physician, for nature has often a tendency to overdo in her efforts, and in the end the results are not always happy. Joints may stiffen, muscles may degenerate, bodily movements may become depraved; fever and diarrhœa may exhaust; and vicarious action, while relieving the diseased cells may strain others. Not infrequently, also, nature's defensive powers are handicapped by congenital weakness, by the results of previous disease, by the changes due to age, and by environmental conditions, all of which demand the thoughtful attention of the physician. Simple expectant treatment must be, and always will be, *inexcusable negligence;* but the rational, so-called expectant, treatment of the master not infrequently proves to be the best therapeutics: the treatment that, with a clear insight into the pathological processes involved and the course the disease may take, follows the indications of nature and places the natural defences of the organism at their maximum of activity by means of efficient rest, fresh air, suitable dietary, wholesome environment, and a certain amount of psychotherapy, and, when necessary, supplements these forces by the use of hydrotherapy or climatotherapy.

Of the demand for fresh air in the treatment of all forms of disease, it seems scarcely necessary for me to speak. It has been well said that the definite conception of the prophylactic and remedial powers of fresh air, which has gradually developed in recent times, chiefly through the clinical study of pulmonary tuberculosis, should rank as one of the most valuable discoveries achieved in medicine. It is possible, however, that in some cases the "free, fresh, flowing air" treatment of disease may be injudiciously used, or carried to an extreme; for it must be remembered that currents of cold, moist air, and sudden changes in temperature without efficient protection to the body, may, under certain conditions, depress the local and even the systemic powers of resistance and favour an increase in the microbic invasion. Nevertheless, numberless facts point to the conclusion that the cool, moving air of the open operates as a stimulus of high importance, especially in those who breathe efficiently through the nostrils; and for the many, the ceaseless adjustment of the organism to the fluctuation of the physical factors of climate develops an active vasomotor response which greatly promotes the maintenance of health.

On the necessity for the physician carefully to supervise the dietary of all his patients, I desire to insist. I do not propose to discuss whether Chittenden is right when he asks the labourer to supply only the bare necessities that his organism demands, or Hutchison when he claims that the system will work more smoothly when it has enough and to spare, but I do feel like urging the necessity of a very simple, varied dietary for the greater number of our invalids, be they surgical or medical. Our hospital trays often contain too many dishes, some of them distinctly difficult of digestion. The invalid's stomach will digest a few selected articles of nutritious food, when it may be unable to take care of an equal number of varied courses.

The question of the exact foods to be used in our dietaries is gradually assuming new importance, for recent investigations and observations point to a certain amount of specific action as existing in some foods over and above their dynamic and economic values.

While experiments on animals point to the inadequacy of certain dietaries to maintain growth and body weight, even although they contain theoretically a sufficient amount of proteids, fats, carbohydrates, and salts, other observations indicate that certain constituents in food have a greater effect upon growth than that indicated by their caloric value.

Furthermore, there are a number of clinical and experimental observations which show that certain foods have a specific action on some of the hormones in the body. Diet has, in certain cases, a marked effect upon the reaction of animals to iodine compounds, an effect probably exerted largely through an action on the thyroid. The beneficial results not infrequently arising from the addition of oatmeal to the diet in certain cases of diabetes mellitus in man, are not accounted for by any difference in its starch, but appear to be specific, for an oatmeal diet definitely increases the resistant powers of some animals to the poison acetonitrile, an effect attributed in part to the specific action of oatmeal upon thyroid secretion. Other diets notably lessen the resistance of animals to certain other poisons, a variation which may amount to as much as fourfold. Experiments also point to different diets producing very definite effects on the susceptibility of these animals to transplantable tumours, and it is hoped that in a short time it may be possible, by a special arrangement of the dietary, to influence favourably in man the tendency to malignant metastases and recurrences. At the present, however, our knowledge is still too imperfect to permit this department of therapeutics to be effectively utilized.

In recent years, the value of psychotherapy has been, in my opinion, overrated; nevertheless, the many temples of so-called Christian Science, its hundred thousand of votaries, and the many millions of dollars paid into its treasury, constitute an effective demonstration of the influence that the mind can have over some ailments in the body; and scientific therapeutics demands that even this utilizable therapeutic power be not overlooked. Confident hope may undoubtedly act as a bridge to carry a patient over many functional troubles, quieting the nervous system, and strengthening the heart; and what more depressing factor can we, as physicians, encounter than despair, when hope has flown out of the window. The value of suggestion, a procedure by which we develop certain ideas in a mind predisposed to accept them, by imposing them with authority, must be regarded also as a positive therapeutic agent, but one to be employed with caution, and to an extent which will vary greatly with the character and condition of the individual patient.

In every case where psychic therapy is employed, it is important to associate with it the influence exerted by regular occupation, for both mind and body, of a sufficiently interesting character to awaken and maintain the patient's attention, and gradually to develop a healthy interest in things outside of himself, while at the same time over-fatigue is avoided. Morbid thoughts cannot be driven out and kept out, unless healthy thoughts have supplanted them in the patient's mind.

The psycho-analytic methods of Freud and Jung may, I fear, in some cases, prove to be dangerously suggestive, and even when employed with success are to be regarded as only a preliminary procedure.

And now I hear you ask, what about drug therapy? A recent writer, in a humourous vein, asks the question, Why do physicians give drugs? To cure disease? Not always. Sometimes drugs are given because patients demand them, and are not happy until they get them, and often are not happy even then; sometimes they are given to hide ignorance and to mark time, while the physician waits and watches; at other times they are given as a therapeutic experiment; and occasionally, like a gambler on the Stock Exchange, speculating in futures, the physician writes a prescription containing drugs, of which he knows little, in the vain hope that it may chance to bring him in an enhanced reputation. Alas! Alas!

Permit me to label this as a satire, yet containing truth, as the inner consciences of all must admit.

No physician, however, who has observed the definite action of drugs in the pharmacological laboratory will question the power which they place in his hands to stimulate or to depress function. A few drugs have undoubtedly the definite, specific power to cure, but the number of these is so small that they may be counted on the fingers of one hand; mercury, quinine, salicylic acid, salvarsan, and atoxyl; to these we may add, perhaps, colchicum, potassium iodide, and the antiseptics when used externally. All the other drugs in our materia medica are valuable only for their power to influence functional disorder and to relieve disturbing symptoms; but how great the assistance that even in this way is to be obtained! Drugs used with a clear and definite knowledge of their exact sphere of action, may greatly aid nature in maintaining the efficiency of the organism by sustaining the circulation, by strengthening the breathing powers, by assisting elimination, and by stimulating secretion; also, in relieving symptoms, how precious under certain conditions may their action be.

Mere symptomatic therapeutics, however, of whatever character, are rarely permissible, for they tend to mislead by suppressing important symptoms and often by introducing new ones. Such therapy altogether lacks scientific exactness, for it studies complex facts without any consideration of their underlying causes. Symptom treatment should only be employed when the symptom is in itself dangerous, or when it seriously interferes with rest and nutrition.

It still occasionally happens that we have to use our drugs empirically. The pathologist has not yet revealed to us all the mysteries of disease, and until he illumines the way and points out the underlying cause, the therapeutist has to fall back on the too often vague experience of the past, which he must then blend with as much science and common sense as practicable.

Personally, however, I have slowly come to the conclusion that as physicians we attempt to use too many drugs of which our knowledge is not sufficiently exact to enable us to use them rationally and scientifically. Added to the long list of old standard drugs whose exact action is often forgotten or disregarded, numberless new drugs, with an unknown or unproven action, have been foisted upon the profession, and as a consequence we have to note a distinct tendency in many physicians to lag behind the scientific attainments of the present, and sluggishly to indulge in an imaginative empiricism that ends in nothing.

I believe it to be better for the physician's credit and for his patient's well being that his materia medica be limited to a comparatively small list of drugs, whose proven action he knows, rather than that he should roam over a long list of unknown and sometimes untried drugs, and use them in haphazard, complicated prescriptions.

And in regard to the use of a few of our pharmacopœial drugs, permit me to endorse some statements made by Osborne, of Yale University. There is no proprietary organic iron that will do more good than one of the inorganic salts of the pharmacopœia. Large doses of iron are not needed. Two or three grains of any non-irritating iron salt will supply more iron to the patient's stomach than his system can metabolize in as many days. The expensive, organic iron preparations, which furnish an enormous profit to manufacturing houses, have the only advantage that they supply the iron in very much smaller doses than the physician is accustomed to order, and, therefore, they appear to agree better. The strongest and one of the most irritating iron preparations we can use is the tincture of iron, but one or two drops in a little syrup of lemon will give all the iron required for physiological purposes: even a child will scarcely notice that it is taking anything disagreeable. Digestants are rarely needed. Diastase and pancreatin are destroyed by the acid gastric juice. Calcium glycerophosphate may have a definite value, but, if so, it appears to be the only glycerophosphate that has. All the salts of quinine have a value, but cinchonin and cinchonidin are much weaker, and have no advantage. Tasteless quinines have almost no value. Stimulating and sedative expectorant mixtures are apt to disturb the stomach, and often do more harm than good. In all the salicylic acid preparations before the profession, the action obtained is simply a question of dosage. The proprietary preparations that furnish salicylic acid without its disagreeable effects, are either slowly and imperfectly absorbed or the amount of acid in them is small. If the dose of sodium salicylate were made smaller, the absence of unpleasant symptoms would be the same. In rheumatism, when it is necessary to have a prompt salicylic acid action these preparations either fail or, when pushed, give rise to symptoms similar to those produced by salicylic acid.

Probably the most important problem presented to the physician in every acute or prolonged infection, and after every operation, is how to combat failure of the circulation. It has been recently shown that in a large percentage of cases circulatory failure is chiefly due to a vasomotor paresis most marked in the vessels of the splanchnic area, and it is this paresis, and not the heart muscle, to which treatment must be directed. Fresh, cool air, the local application of heat and cold, and the employment of vasomotor tonics, or actual vasoconstrictors, are indicated. The group of cardiac stimulants increase for the time the force of the heart's action, but do not permanently strengthen it. They are as a whip to the wearied heart, and have a temporary value only. Camphor, caffein, and strychnin are the best we know at the present. The action of caffein and strychnin is more prolonged than that of camphor, and the effect on the medullary centres more definite. To strengthen the failing musculature of the heart there is no drug that equals digitalis, but we require a carefully standardized preparation made recently from fresh leaves. A reliable strophanthin given intravenously or intramuscularly, is a quickly acting and valuable cardiac tonic, but the preparations of strophanthus itself are of little value when given by the mouth. The vaunted efficacy of the cactus preparations has been thoroughly tested and shown to be a delusion. Alcohol may be of value in certain conditions, but more as a rapidly absorbed food than for any special action as a cardiac tonic.

During the past year, therapeutists have been greatly encouraged by the success which attended Ehrlich's persevering investigations into the possible modifications of therapeutic action by variations in chemical structure. Animated by the belief that pharmacological action is dependent upon an affinity between the special tissues acted upon and the physiologically active principles in the drug, an affinity which determines its distribution in the system and the special cells to be brought under its influence, he demonstrated that these affinities may be altered by variations in chemical structure often of a slight character.

The story of the persistent steadfastness with which he carried on these investigations, even from the time of his student days, is a wonderful record of confident perseverance. Latterly, in his researches to find a drug that would act as a specific in syphilis, thousands of substances had to be tested by chemical and animal experimentation. He tells us that he himself examined over six hundred in this thorough way. All the medical world is aware of his final success and rejoices with him in it. A similar investigation is now being carried on in the Rockfeller Institute, where Flexner is endeavouring to elaborate some modification of urotropin which, while retaining its central formation with its effective germicidal action, may develop a specific affinity for, and a toxic action on, the microörganisms of poliomyelitis.

The old idea of the value of a combination of drugs, not as in olden times giving several at the same time, but using one consecutively to the other, has again been revived by Todd, of Montreal, and more recently by Ehrlich, who speaks of it as attacking the enemy from several sides. An antibody or specific drug will operate, he says, with greater effect against an already injured parasite than against one possessing normal resistance, and it may be possible by a fortunate combination of antitoxic serum and specifically acting drug, to effect complete destruction of an invading organism in those cases in which either, acting alone, fails to effect a complete cure. Thus, in trypanosomiasis we may follow a course of atoxyl with one of mercuric perchloride; and in syphilis we may follow our course of mercury with injections of salvarsan. Flexner also calls attention to the possibility that in the near future we may still further increase the effective activity of our drugs by introducing them directly into the affected tissues, where the action of the infecting parasite is most powerful and the resistant forces of the organism at their weakest. Lumbar puncture at the present day enables us to place our antitoxic serum directly into the spinal canal, where the meningococcus works havoc comparatively unchecked.

In time, we may similarly treat the brain, the heart muscle, and perhaps even the lung tissue, by drugs or sera introduced directly into their substance. *Success will come with time.* The subtleties of chemistry will yet provide the physician with many drugs having specific action against many forms of infection, and careful experiments may reveal more direct and definite methods of employing them.

In anticipation of this time there has arisen a laudable effort among synthetic chemists to discover new derivatives from radicles possessing definite therapeutic powers; but it must be remembered that before any such new derivative can be recognized as having a therapeutic value, it must be carefully studied in a pharmacological laboratory, and the reports presented *must be free from secrecy and commercialism.* At the present day numberless commercial houses are thrusting upon the profession an enormous array of new drugs with new names, catchy and therapeutically suggestive, covering much secrecy and, I am sorry to add, much knavery, about their composition.

Of these, a few may have some slight value; the majority, unfortunately, have little or none, and some appear to be distinctly harmful. Of the exact action of these drugs for good or evil we have at present little knowledge, except the statements, which are invariably much prejudiced, of the commercial houses introducing them.

Many of these so-called new drugs, introduced even by reputable houses, have been shown by analysis to be merely a mixture of old and well-known drugs, or to have a chemical composition differing greatly from the one given. It appears to me, therefore, to be of the utmost importance that physicians should accept all unproved statements very cautiously and should still rely almost entirely on the standard, official preparations of which the exact composition and physiological action is well known.

In the detection of the false and the uncovering of fraud, a great work for the profession has been accomplished by the thorough investigation into the composition of these proprietary drugs carried on under the direction of the Council of Pharmacy and Chemistry of the American Medical Association, the results of which are published from time to time in its journal. Any physician desirous of obtaining a correct knowledge of the composition of these nostrums should consult the reports of the chemical laboratory of our sister association to the south of us. Their publication, *New and Non-Official Remedies*, is, I believe, absolutely reliable, and should be in the hands of every physician. Let me also say that I think we should appreciate highly the proposition of the members of this council to institute a critical study of many of the important questions in therapeutics, which still demand investigation. It is proposed to make a compilation of all available published information on each question, and to supply this compilation to every member of our profession who will assist with careful clinical research. Later on they promise to furnish digests and monographs, giving the final results of their investigations, which will supply the physicians with facts upon which some dependence can be placed. Such an effort should have not only our good wishes but also our active coöperation.

Let me, in conclusion, emphasize the great value to the physician and his patients, and to the world generally, of these advances which have taken place during the past few years in rational and scientific therapeutics. During this comparatively brief period the physician has gained a clearer insight into the marvellously effective defensive powers of the organism, and a keener appreciation of the value of the various methods of assisting nature in her struggle with disease. The physician no longer antagonizes her efforts by a fatuous empiricism, nor folds his hands in a know-nothing expectancy, but cautiously, yet confidently, uses all the approved means placed in his hands by modern, scientific medicine, and shuns the many will-of-the-wisps dangled before his eyes in the form of proprietary cure-alls.

DIABETES MELLITUS

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NO attempt will be made in this paper to give exhaustive consideration to any particular phase of the disease diabetes mellitus. The treatment of that disease is the theme of this paper, and yet to understand the *rationale* of treatment it is necessary to refer more or less briefly to its ætiology and pathology.

Ætiology. It used to be taught that diabetes is not a common disease. An experience of twenty years devoted almost exclusively to the treatment of diabetes warrants the statement that the old idea that diabetes mellitus is a rare disease, is no longer tenable. Each year seems to prove the increasing commonness of this serious pathologic state.

What, then, is the cause, not only of the disease itself but of its increasing prevalence? A certain small percentage of cases is due to some severe preëxisting condition, such as irritation of the floor of the fourth ventricle, or syphilitic and malignant diseases of the pancreas. Such cases will not be considered in this paper, as they represent the rare, and not the common, cases. By far the greatest number of cases of diabetes mellitus are those which are due to what may be called errors of metabolism.

There are, it is true, other causes: nervous strain, the excessive use of starches, an hereditary tendency to glycosuria, the so-called gouty diathesis, over-functioning of the thyroid, as in exophthalmic goitre—all seem to play a part in the ætiology of diabetes mellitus.

Accepting, then, these various factors as causative elements, it is not difficult to understand why the disease is becoming yearly more common. The nervous stress and strain of American life, the astounding lack of care in eating—not only as to the quantity of food taken but as to the kind, and the rapidity with which it is eaten—these all too common and well-known dietetic and hygienic sins are quite sufficient to explain the greater number of diabetics which statistics and experience, together, prove to exist.

Before leaving the subject of ætiology, it seems worth while to mention a possible, but generally overlooked, cause of the disease. I refer to the enormously increased consumption of glucose or "corn syrup" during the last half-decade. Practically all other sugars used as foods need elaboration in the body before they reach the form of grape sugar (glucose), which is necessary for their assimilation. In the case of commercial glucose, which forms the bulk of most of the syrups now on the market, the substance is already in what may be called the end-product stage. Is it not reasonable to suppose, therefore, that a person who, for some of the reasons given, has a tendency to glycosuria, may find his organism completely overwhelmed by the ingestion of the already elaborated glucose when taken in the form of corn-syrup? In other words, glucose, when taken into the system, can pass directly into the blood stream, instead of taking the lower and more circuitous route through the liver, that the other sugars require. How large an ætiologic factor the increased consumption of commercial glucose may be, I cannot state, but I am convinced from much clinical experience that quite a large percentage of these cases is added to the increasing list.

Errors of diet, then, constitute by far the greatest and most important cause of diabetes. A careful study of more than thirteen hundred diabetics treated in the past twenty years convinces me that the majority of patients suffer from the disease because they have ignorantly or carelessly abused their systems with the amount or the kind of food they have eaten or by their method of eating.

Improper insalivation of the food, due to the pernicious habit of "bolting" it, too large an amount, mental concentration, such as thinking deeply, reading or worrying while eating, all tend to produce that disarrangement of metabolism which exhibits itself as diabetes. The use of large amounts of carbohydrates in which the starches are but partly cooked, is, I believe, a fertile cause of the disease. Crackers,—especially the Graham cracker to which popular opinion has given an exaggerated food value,—batter cakes, baking-powder biscuits, corn-bread, waffles, are all examples of the semi-raw starches which should be avoided.

Pathology. It is practically impossible to separate the ætiology of diabetes mellitus from its pathology, for the two factors are so closely related. Yet it seems worth while to consider briefly, under the term "pathology," the prevailing theory regarding the relation of the pancreatic structure to the disease itself.

While it cannot be said to be definitely proved that most cases of diabetes are immediately dependent on the functional insufficiency of the islands of Langerhans, the islet hypothesis is gaining ground with every additional investigation. The work of Bensley[1] on the islet tissue has demonstrated the essential individuality of those important parts of the pancreatic structure, while MacCallum's[2] observations have seemingly proved that carbohydrate metabolism is dependent on the islands of Langerhans. Weichselbaum's[3] careful histologic examinations of the pancreases of nearly two hundred diabetics showed distinct lesions of the islets in every instance. Of course, even though we accept the islet theory in its entirety, it merely means that we look upon the lesions of the islands of Langerhans as the *immediate* cause of the disease. Naturally there must be a cause for the lesions themselves, and that cause, I firmly believe, will be found to be a long-continued toxæmia, brought about, in the vast majority of cases, by gross dietetic errors. We are now making careful investigations on this line in our laboratory.

Treatment. The treatment of practically all non-surgical diseases may be divided into the medicinal, the dietetic, and the hygienic. It is not too radical a statement to say that in diabetes mellitus the last two methods of treatment only are of any avail. If there is a drug which has any particularly beneficial effect in this disease, I do not know of it. That the various drugs which are commonly mentioned in connexion with the treatment of diabetes —arsenic, codein, trypsogen, and cellasin—are not only valueless, but vicious, a rather large personal experience has demonstrated beyond a question. Particularly is the administration of certain proprietary forms of these drugs to be deplored. Arsenic, when prescribed under a trade-marked name and in whatsoever combination, is still arsenic, with all its dangers and limitations, and is just as potent to wreck the digestive system as when prescribed as the simpler and cheaper Fowler's solution. These facts are mentioned because experience shows that far too often patients come for treatment with the codein habit and a severe constipation superimposed on the diabetes, and with ruined digestive apparatus, from the abuse of arsenic prescribed sometimes as official preparations, but more often in a proprietary form.

Let this point be made clear: arsenic and opium may have a limited—very limited—use in the treatment of some cases of diabetes, but in the great majority of cases these drugs simply complicate the situation and make it harder for the patient to realize that his recovery depends essentially on the care with which he follows the prescribed treatment. We must always bear in mind that the public has not yet outgrown the belief that there is something supernatural in drugs, which are popularly supposed to act as specifics for whatever condition they may be prescribed.

The treatment of those diabetics with which this paper deals —that is, those whose condition is due to metabolic errors— resolves itself into four problems:

First. The patient must have his blood and tissues freed as nearly as possible from the sugar and the dangerous acetone bodies with which they are saturated.

Second. The carbohydrate tolerance must be determined, and, when found, must be increased.

Third. A diet must be furnished which will provide energy sufficient to sustain life, but will not increase the ingestion of sugar beyond that which the body can oxidize.

Fourth. Constipation must be prevented or relieved, as that condition increases the toxæmia and lowers the patient's vitality.

Behind these rules or suggestions, there is the essential element of impressing the patient with the nature of his disease and making him realize that the pathologic changes which a long-outraged system shows, cannot be remedied quickly. If a disease exists in which the earnestness and the personal equation of the physician is necessary to success, that disease is diabetes mellitus. Of this point more later.

Experiences of others. Before discussing the treatment of diabetes from a personal standpoint, it will be profitable to refer briefly to the experiences and suggestions of others in the same field.

One of the most widely heralded methods of treatment is the so-called oatmeal diet therapy. It is mentioned only to be condemned, and because of the prominence it has been given in contemporary medical literature. It is a dangerous fad, and both clinical tests and personal experience with those diabetics who have been subjected to this dietary, force the conclusion that the oatmeal will kill many more patients than it will ever cure. Apparently its chief benefit is its nauseating tendency, which prevents the gratifying of the craving appetite ever present in the diabetic. Any patient that is benefited by this method will receive much greater benefit from the ordinary treatment of the trouble. Even its most enthusiastic advocate, Magnus-Levy,[4] admits that its advantages are chiefly of a negative character; that is, it does good by lessening the amount of meat that is ingested.

Not many months ago Sewall[5] reported that he had found some diabetics, past middle life, improve greatly when given an infusion of lean meat acidulated with hydrochloric acid. He claimed that metabolism improved and the amount of sugar in the urine became less, when this treatment was followed.

Inulin is said by Strauss[6] to be of value in the treatment of diabetes. He recommends that the patient be given vegetables such as dandelions, artichokes, etc., which are rich in inulin.

Blum[7] is of the opinion that the vegetable albumins are more useful to the diabetic than are the meat albumins.

Remarkable results are reported by Cowles[8] in a case in which he fed the patient from one to six uncooked pancreases every day. Such heroic and unusual treatment was made possible by the fondness of the patient for raw or underdone meat. Marked improvement is said to have followed as long as the raw pancreases were eaten, but the symptoms returned after this diet was abandoned, and the disease finally killed the patient.

Dr. E. I. Spriggs[9] is entirely correct when he insists that the success of the dietetic treatment of this disease is largely dependent on the way the allowable food-stuffs are presented to the patient. The importance of good cooking and of variety in presentation of food is great enough, in all conscience, to the well man, but to the diabetic these points are vital, and equal to, in importance, the very quality of the food itself.

While the real cause of diabetes is, in the majority of cases, doubtless, due to gross errors in eating, resulting in a long-continued toxæmia, or auto-intoxication, it is probably true that the immediate cause lies in the failure of the pancreas to manufacture its internal secretion. Assuming such to be the case, it has been thought that, by giving the diabetic pancreatic extract, the lacking secretion would be supplied. In practice, however, the use of pancreatic extract has not produced the results that have been hoped. This is probably due to the fact that while the normal pancreas is pouring its secretion all the time, it is impossible to administer enough of the extract to supply more than the smallest fraction of the amount required by the organism. Personally I have never seen any beneficial effects from large doses of the various pancreas extracts on the market. Possibly if we could use the uncooked pancreases, as used by Cowles, we might gain satisfactory results.

Nor has the attempt to isolate a hormone that would act as a stimulator of sugar-oxidation been more successful. Torschbach,[10] who has done splendid work in this direction, admits that the only result of giving this hormone is to produce toxic symptoms in the patient. It is true that the excretion of sugar is temporarily reduced in such cases, but not more than might be explained by the febrile temperature which the administration of the hormone produced.

Leschke[11] also has experimented exhaustively with extract of pancreas, but with no better results. In fact, it may be conservatively said that in the present state of our knowledge we are not justified in attempting to treat diabetes by means of pancreatic extracts.

The experiments of Hedon[12] should be mentioned. This investigator had long held that the question of the pancreas producing an internal secretion was not proved. By experimenting, however, with normal and diabetic dogs, Hedon was able to adduce additional testimony in favour of the "internal secretion" hypothesis. He also demonstrated the importance of the liver in diabetes, and it seems not improbable that we may have to modify our views of the cause of this disease. That is, we may be forced to conclude that diabetes, instead of being immediately due to a diminished power of the pancreas to oxidize sugar, is really caused by an actual over-production of sugar in the liver caused by the over-ingestion of the various sugars and starches, or more than the liver is able to properly take care of.

This much is certain, diabetes mellitus is much more easily relieved if the patient comes under treatment soon after the disease first manifests itself, because the vital organs are less seriously affected. When certain cells are destroyed by the presence of this poison for a long period, the patient may be relieved but not cured.

Personal experiences. But to return to personal experiences. The most important principle in the treatment of diabetes is that of limiting the quantity of food that the patient consumes. Control of the amount of food is just as important as control of the kind of food. Nearly every diabetic has a gluttonous appetite, and is apparently as helpless to control it as the average morphine addict is to restrain his craving for the drug.

Many practitioners seem to hold the unfortunate opinion that so long as the quantity of starchy foods is limited, there is no reason for restricting the proteins and fats. *Nothing could be further from the truth.* In the first place, practically every food-stuff is capable of yielding a certain amount of sugar, and to give the patient *carte blanche* as to quantity of food means that no matter how carefully the kinds of food are selected, he is going to take more carbohydrate than his system can handle. But worse even than this, is the enormous tax on the already overstrained emunctories that the ingestion of large amounts of proteins and fats causes. There is little doubt that many cases of diabetic coma are brought on by the patient eating, not wisely but too well, of articles of diet that in moderation are harmless. So important a factor is the quantity of food, that many mild cases of diabetes will respond to a simple restriction in the amount of food permitted, without reference to the kind. In other words, an anti-diabetic regimen is not always necessary; a mere reduction in the quantity of ordinary food will bring about elimination of the glycosuria.

The fundamental principle in the treatment of diabetes mellitus, is, I am convinced, that of impressing the patient with the idea that he can and must get along on a much smaller quantity of food than usual. He must be impressed with the fact that following an anti-diabetic diet does not mean that he can indulge in proteins and fats *ad libitum*, merely being careful to restrict the carbohydrate intake. A somewhat long and full experience with this class of cases warrants the statement that success or failure in treatment of diabetics rests on this one point—the control of the patient as to the quantity of food he takes and the thoroughness with which it is insalivated.

The question of weighing the food naturally arises in this connexion: theoretically it might seem desirable to govern the intake of food with the accuracy that scales would ensure; practically it is not. Educate your patient to control his appetite by his will and his judgement, rather than to rely on any mechanical appliance; he would cease to use the scale, in all probability, after he left your immediate supervision, and it is much better that he should, while under your charge, form a habit of self-control which will be his salvation. It is no exaggeration to say that the chief benefit the patient derives from treatment is that of being *taught to care* for himself.

Drinking water. A mildly alkaline water is best for the diabetic, one with sufficient salts in solution to increase its natural diuretic effect and somewhat neutralize the acid tendency. The patient may drink freely of such a water and, if the diet is properly controlled, the amount he craves will gradually diminish. Distilled water should be prohibited. The patient should be made to understand that drinking a large quantity of water at each meal will not take the place of systematic drinking of water at proper intervals and in the proper quantities.

When the patient first puts himself in your care, his diet should, for a few days, be restricted as nearly as possible to proteins and fats. If, however, the patient shows signs of acidosis or of coma, carbohydrates must be carefully given. The food should be well cooked and served in as appetizing a form as possible. Fresh vegetables should be added as the sugar in the urine diminishes, but the kind and amount must be carefully watched so as to keep within a permissible limit of four per cent. carbohydrate.

Do not try to base the amount of food allowed on the ordinary caloric necessity of the body, as many writers advise. It is not the amount of food that the body *should* metabolize, that is to be given the patient, but the amount it actually *can* metabolize. If a healthy man, weighing one hundred and fifty pounds, requires twenty-eight hundred calories daily, it does not follow that a diabetic of the same weight should be given food enough to supply that amount of caloric energy. In all probability, the sufferer from diabetes will find it impossible to metabolize even eighteen hundred calories. Why, then, throw on the already overtaxed excretory organs food enough to produce an additional one thousand calories that cannot be utilized by the body?

Constipation. Constipation is an invariable accompaniment of diabetes, and it is one of the hardest of the many complications of this disease to combat successfully. The generally used purgatives, aloes, cascara, calomel, etc., should be avoided, and olive oil and castor oil used instead. At least one daily bowel movement must be assured. If the patient rebels at oil, a palatable emulsion can be made which will answer the same purpose. Equal parts of olive oil, castor oil, and glycerin are emulsified with some high class brand of gum arabic and the preparation flavoured with oil of gaultheria or cassia.

Olive oil, castor oil, glycerin, of each 160·0; gum arabic, 18·0; flavouring (oil of cassia or gaultheria), 0·5.

Exercise. Moderate mental laziness and moderate physical activity is the ideal condition for the diabetic. When night comes he should be wholesomely tired, but not fatigued. Keep the patient in the open air as much as possible, and remember that the ventilation of the sleeping room is of almost as much importance to a diabetic as it is to a consumptive. The skin should be kept in the best possible condition by proper bathing, and if by non-fatiguing exercise a mild degree of perspiration can be induced, the overworked kidneys will get the benefit of it.

Gluten flours. Gluten flours and gluten foods are, to many physicians, and to still more diabetics, words to conjure with. It is still a widespread fallacy that gluten flours are starch-free flours, and that they are perfectly innocuous to the diabetic. Nothing, unfortunately, is farther from the truth. In Canada, as well as in the States, a very large proportion of the so-called gluten flours are worse than worthless as diabetic foods. I say worse than worthless because the popular reliance on them makes them more dangerous than ordinary flour. It is a common thing to find patients who have been told to purchase "gluten flour" and have been left wholly to their own devices and desires as to the quantity and quality of the product they should eat.

I give here a list of some of the most widely advertised gluten flours on the American market, with the carbohydrate content, as admitted by the manufacturers:

Jireh Flour	73·0 per cent. carbohydrate.
Wilson Brother's 20 per cent. Gluten Flour	64·1 per cent. carbohydrate.
Brusson Jeune Gluten Bread	49·7 per cent. carbohydrate.
Farewell & Rhines Gluten Flour	46·0 per cent. carbohydrate.
Hoyt's Gum Gluten	43·2 per cent. carbohydrate.

These, I say, are the manufacturers' own figures. Evidently the percentage of carbohydrates is under, rather than over, stated. What can be thought of the morality of selling, as food for diabetics, flours containing from forty to seventy per cent. of carbohydrate? The false sense of security which the term "gluten flour" carries with it has been responsible for thousands of deaths.

For several years I found it either impossible or impracticable to obtain a safe diabetic flour for my patients, and I was forced to devise a bread of my own. The formula has varied from time to time, although the carbohydrate percentage has remained practically the same. At the present time, the formula is:

Unadulterated Soy Bean Flour	350·00
Unground Poppy Seed	30·00
Eggs	250·00
Pure Baking Powder	15·00
Water	340·00

This batter makes, not bread, in the ordinary sense of the word, but biscuits or crackers which are well baked. They contain about four per cent. of carbohydrates. If they are to be kept for any length of time, they are thoroughly dehydrated until their moisture is reduced to one-fourth of one per cent. These, if placed in tins carefully sealed, will keep practically indefinitely.

The dehydration of these biscuits is desirable for another reason than that of increasing their keeping qualities—that of requiring thorough mastication and insalivation, two essentials in the successful treatment of diabetes. The poppy seeds in the formula are added more for the purpose of encouraging mastication than for the caloric value of the oil they contain. The flavour of the poppy seed is brought out by thorough chewing, and the palatability of the biscuits is greatly enhanced. I have never seen a diabetic who masticated his food, and one of the first things the physician must impress on his patient is the importance of thoroughly chewing and insalivating the food. Mastication is the first process of metabolism, and one of the most important. It must not be thought that these starch-poor crackers are as pleasant to eat as ordinary bread or biscuits. They are not, and the patient must be told that he cannot hope to get in a diabetic biscuit the palatability of the normal product. Nevertheless, they make a safe and acceptable bread-substitute, and more than this can neither be expected nor obtained.

Treatment in detail. For the first two weeks, then, the patient is to be restricted to a careful anti-diabetic diet, unless the sugar in the urine practically disappears in less than that time—as in many cases it will. When the glycosuria has ceased, the carbohydrates are to be cautiously and gradually increased, always warning the patient of the danger of overeating the *permissible* products. Should the sugar persist, the patient must be put to bed and restricted to a diet of one raw egg and two ounces of olive oil three or four times a day. The free use of the mildly alkaline drinking water previously referred to must be continued.

If this treatment results in any symptoms of acidosis, the amount of oil given must be decreased and small quantities of carbohydrates cautiously given—the patient, of course, remaining in bed. If, in spite of this treatment, symptoms of coma develop, small doses of sodium bicarbonate may be tried, although I am free to admit that I have seldom seen any good results from its use. The soda can be given either by mouth or, better, by rectum. Oral administration, no matter how carefully done, always results in digestive disturbance and should never be kept up for any length of time. Hot packs, to cause free diaphoresis, may be tried as a forlorn hope in impending coma, in connexion with the rectal injections of sodium bicarbonate well diluted.

In most cases, fortunately, the strict diet of the preliminary treatment results in bringing a sugar-free urine. When this happy result is accomplished, small, definite quantities of starchy foods are added to the dietary. It will be found, usually, that the physiologic rest which the strict diet has given the patient, has resulted in an increased tolerance for carbohydrates. Sugar in the blood seems to establish a vicious circle, and its very presence seems to render the system more impotent to metabolize carbohydrates. By reducing the amount of unchanged sugar in the blood stream, the circle is broken, and the system seems to attain greater capacity for "burning up" starches. The starches must be added with great care and at only one meal a day at first. Breakfast is the meal of election, as metabolism is seemingly more active at that time than at any other. With an increase in tolerance, the starches may be cautiously given at the other meals, in gradually increasing quantities, until sugar again appears in the urine. When this occurs, all starches are withdrawn again for a few days, and then the same process is repeated up to a point just below that at which glycosuria occurs.

Experience has shown that in determining the carbohydrate tolerance, it is best to add the starch in one form only, probably because the system can more readily adjust itself to one kind than to several—even though the total carbohydrate content is the same. The kind of starch will differ with the patient and can only be determined by trial. One man will tolerate oat-starch better than wheat-starch; another will have difficulty in metabolizing both wheat and oat-starch, but will show a tolerance for potato-starch. The patient's peculiarities must be ascertained and the diet governed accordingly.

A patient with a well-developed case of diabetes needs almost as careful watching as does a drug addict. On the subject of eating, the diabetic is mentally unbalanced, not only as regards starches and sugars, but as regards the amount of practically all articles of diet. He is hungry all the time; he suffers from what might be called amylomania.

Again it must be emphasized that the *quantity* of food allowed the sufferer from diabetes is as important as the *kind* of food. Digestion is always impaired in the diabetic. In practically all specimens of diabetic urine examined, large quantities of indican are found, meaning much intestinal putrefaction. It must be evident on a moment's thought that a person with impaired digestion cannot digest as much food as a healthy person. How worse than useless, then, it is to permit the diabetic to eat large quantities of food, even though such foods may be practically starch-free. It has been urged that the diabetic must be given a diet that will furnish so many calories of energy daily. To this I would reply that it is not the amount of food the patient ought, theoretically, to take that should determine his diet, it is the amount he *can actually use.*

Acidosis. We should always carefully test for acetone and diacetic acid, as about fifty per cent. of cases have one form or the other of acidosis; some cases have both forms.

If these acetone bodies increase or accumulate to a sufficient degree, coma appears: hence their great importance. We have found that eight per cent. of cases showing both sugar and acetone bodies may be quickly relieved of glucose. The acetone bodies, however, remain, practically always, accompanied by albumen, which is possibly caused by irritation of the kidneys due to the presence of these products.

Baked potatoes have proved to be the best starch for use in these cases, in just sufficient quantities not to cause a return of glucose.

The diabetic child. In cases of juvenile diabetes, a guarded prognosis should always be given. By this it is not meant that such cases inevitably terminate fatally, but there is no doubt that diabetes in children is an extremely serious disease. No case of this kind can be successfully treated unless the patient is taken out of the charge of its parents and put under the control of a competent, disinterested person—preferably, though not necessarily, a nurse. Parents and relatives do not, and cannot, withstand the child's pleading for sweets and starches. It is practically impossible to make a healthy adult believe that the starches and sugars, which in health are so wholesome and necessary a part of the dietary, are deadly poisons to the diabetic child. Given the proper control of the patient, however, diabetes in children, while always serious, is not necessarily fatal. But new dietetic habits must be drilled into the child, and the treatment is always tedious and slow; nevertheless, given careful supervision over a long period of time, the chances are in favour of recovery.

If diagnosis is made early in the case, the response to treatment is much speedier and more satisfactory. Diabetes in children makes rapid progress—much more rapid than in the adult. This is doubtless due to the more plastic condition of the juvenile tissues. The child has not the resistance nor the vitality possessed by the adult, and the effect of sugar in the blood of the child is much more serious and rapid than in the adult. Unfortunately the diagnosis of diabetes in children is often made late in the disease, when the tissues are more or less overwhelmed by it, the diagnosis being late because of lack of time or care in the treatment of the child.

I have found it both expedient and useful to give all patients a printed diet list, to which special instructions are added. This contains a list of permissible food-stuffs and some general hints on the hygiene of the diabetic. The list follows:

DIET LIST

SOUPS. *Permitted:* Ox-tail, terrapin, tomato, oyster, clam, consommé of any kind.

Prohibited: Any soup containing flour, rice, barley, or meal of any kind.

FISH, FOWL, AND MEATS. *Permitted:* Fish, only if fresh, it may be cooked in any manner; crabs, lobsters, mussels, scallops, shrimps, clams, caviare; oysters cooked in butter without flour or meal; turtle, fowl or game, roasted, broiled, or fried in butter; roast or broiled (not fried) beef, veal, mutton, or lamb; tongue, calf's liver, sweetbreads, calf's brains, bone marrow, heart; eggs, soft boiled, poached, shirred, scrambled, and as omelette.

Prohibited: Meats or gravies cooked with flour or meal. All canned or salted meats or fish. Fried eggs, fried meat of any kind except that noted. Fresh pork, either as roast or chops. Sausage.

VEGETABLES. *Permitted:* Sea kale (cooked), vegetable marrow (cooked), string beans, asparagus, spinach, lettuce, endive, cucumber, beet greens, celery, rhubarb, water cress, tomatoes, ripe olives, brussels sprouts, cauliflower, onions (cooked), egg plant, pumpkin, kohlrabi, cabbage, leeks, turnip-tops, mushrooms, okra, turnips, salsify, squash, carrots, onions, (fresh), dandelion greens.

Prohibited: Parsnips, beets, potatoes, artichokes, string beans, corn (green or canned), beans, peas, sweet potatoes, lentils, and pickles put up with vinegar.

(N.B.—No vegetables are to be dressed with flour, meal or vinegar. Use lemon juice, French dressing, mayonnaise or olive oil as a substitute for vinegar.)

BREAD. *Prohibited:* All kinds of bread-wheat or rye; cakes, waffles, pancakes, muffins, puddings; all pastry, pies, etc. In fact, anything made with flour. Gluten bread (practically all so-called gluten flour contains as much starch as ordinary flour). Rice, corn meal, oatmeal, cream of wheat, cream of rye, grape-nuts, in fact all cereals, tapioca, sago, arrowroot, hominy, buckwheat, macaroni, spaghetti, vermicelli, Welsh rarebit, patent breakfast foods, crackers, and pop corn.

Fruit. *Permitted:* Blackberries, cranberries, raspberries, whortleberries, peaches, strawberries, fresh currants, grape fruit, lemons, oranges, gooseberries, pineapple, cherries, mulberries, pears, apples, green gage plums, sour plums, grapes, nectarines, huckleberries, fresh prunes, fresh figs; pomegranates, apricots. These fruits are listed from minimum to maximum in their sugar content.

Prohibited: Dried raisins, dried prunes, dried dates, dried currants; dried figs, bananas, all kinds of melons, persimmons, all preserved fruits, jams, jellies, etc.

Drinks. *Permitted:* Any good potable water that is mildly alkaline or showing an analysis similar to Waukesha, Mountain Valley or Stafford water; tea (sparingly), cocoa (sparingly), coffee (with moderate amount of cream). Any of the above may be sweetened with one-quarter or one-half gr. tablets of saccharin. Drink six to ten glasses of water each day, with intervals of at least thirty minutes between glasses. Do not drink more than one glass of water at a meal. A glass of hot water upon rising; from three to four glasses between ten a.m. and noon, three or four from three to five p.m., and one on retiring, is a good schedule. Buttermilk should be taken only upon special orders. Sweet milk should never be taken while eating, or shortly after eating meat, vegetables or fruits. Under no circumstances drink milk with flesh. Take lemonade or orangeade sweetened with glycerin.

Prohibited: All alcoholic beverages, especially beer, ale, porter, stout, cider, sweet wines, cordials, champagne, and all mixed drinks. Never drink distilled water for any length of time.

Sweets. *Prohibited:* Sugar in any form, confectionery, syrup, molasses, honey.

Nuts. *Permitted:* Butter nuts, Brazil nuts, hickory nuts, walnuts, filberts, beech nuts, pecans, English walnuts, pistachios, almonds.

Prohibited: Peanuts, cocoanuts, chestnuts. (Do not eat any *old or mouldy* nuts.)

Cheese: *Permitted:* Potted cheese, Edam, Roquefort, New York cheese, grated sap sago.

Prohibited: All other kinds.

Jellies: *Permitted:* Those made of gelatine and sweetened with saccharin or glycerin, as calf's foot jelly, coffee jelly, etc.

Condiments. *Permitted:* Pepper and salt, mustard without flour or vinegar.

General Hygiene. Get up from the table hungry. Satisfy your judgement and not your appetite. Take moderate exercise daily, but do not over exert yourself to the point of fatigue. Live as uniformly and as free from worry as possible. Have plenty of sleep; therefore, keep reasonable hours. Nervous strain and emotional excitement greatly aggravate your condition; avoid whatever might cause either. Eat nothing between meals except sour fruit, and that in small quantities. At each meal eat less in quantity than would a well person. Live as much as possible in the open air; ventilate your sleeping apartment thoroughly.

I wish to call special attention to the fact that many foods and condiments commonly allowed by dietetists are herein prohibited. Among these are ham, salted or preserved fish; salted meats of any kind, because they are more difficult than fresh meats to metabolize; vinegar, pickles, or any condiment containing acetic acid; claret, Rhine wine, or any wine containing alcohol, because I am convinced that the diabetic can and does synthesize the alcohol and acetic acid found in these products into some of the reducing sugars.

The diabetic patient, child or adult, must be seen daily until the disease shows a marked response to treatment. He should bring a specimen of urine every morning. If any increase in the proportion of glucose is found, he must be painstakingly questioned regarding his actions and diet of the day before. It is astonishing what small things have the power to disturb the metabolic equilibrium of the diabetic. For instance, during the summer months in the little city of Waukesha it has been the custom to have a band concert every Wednesday evening. Every Thursday morning the glucose in the urine of our patients is found to be slightly higher —due, without question, to the mild excitement of mingling with the crowd that attends the band concert. Trivial, you will say. Yes, to the healthy individual, but nothing is trivial in serious illness.

It has been found a useful aid in educating the patient to live right, to have him keep a dietetic diary for a few weeks. Both the kind and the amount of food eaten should be written down. This is an aid to the physician and a useful check on the patient. Special directions can be given more scientifically and it will be found to foster accuracy, both in act and statement, in the patient. Many a diabetic who would, either deliberately or unconsciously, so exaggerate in giving a verbal account of his previous day's dietary as to make his statement worthless, will hesitate to put down an untruth in writing.

A diet list, either written or printed, should be given to every patient; this should contain some general, fundamental rules applicable to all diabetics. In addition, the special directions for the individual patient should be put down in writing and the sick man urged to follow them implicitly. It is surprising how many things, which to the physician seem perfectly evident, are not recognized by the patient, and must be specifically mentioned if they are to be taken into account. It is better that we should dispense platitudes, which, if followed, will help our patients, than that, in taking it for granted that those who come to us know more than they really do, we should fail to do our whole duty by them.

The fullest coöperation of the patient is necessary if favourable results are to be looked for. Absolute obedience to orders should be required and maintained.

A Case History. It may be of interest to describe one case of diabetes as typical of the majority of those we see. The following is such a one:

Patient. Swede, aged forty, married, father of five children, a carpenter by trade, consulted Dr. A. J. Ochsner, because his hands and feet were cracked and bleeding. Dr. Ochsner diagnosed the condition as one of diabetes and referred him to me for treatment.

History. He had had the disease, to his knowledge, for about eighteen months when first seen. He had taken codein, and arsenauro in large doses and over a long period; had been permitted to eat all the so-called gluten bread that he wished, and no restriction had been placed on the amount of starch-free foods that he had taken. He had been given a diet slip issued by a proprietary house and permission had been granted to eat any of the foods that the list did not prohibit. Before the diabetic condition developed he had eaten large quantities of partly cooked starches, had bolted his food, and partaken of a badly balanced diet: one containing large amounts of carbohydrate.

Condition when examined. The patient was passing from four to five liters of urine daily, of a specific gravity of 1·046. There was no albumin, and but occasional casts. The skin on the hands and feet was dried, cracked, and bleeding.

Treatment. Twelve glasses (250 c.c. capacity) daily of milky alkaline water was immediately prescribed. All so-called gluten foods were immediately withdrawn, and the starch-poor (five per cent.) biscuits previously described, were substituted. The amount of all food—starch-free and otherwise—was greatly reduced. Castor oil in doses sufficient to overcome the constipation was given, but no other drugs were used. The glycosuria gradually diminished and finally, after four weeks, entirely disappeared.

Subsequent history. No return of the glycosuria had occurred up to the time of his death from pneumonia eleven years later, during which period he returned for examination five times at intervals of about two years. During this entire time the patient tested his own urine with urinometer regularly, according to instructions that are given during treatment to all adult patients.

SUMMARY. To summarize this somewhat lengthy paper:

1. Diabetes mellitus is not a rare disease.

2. While a small percentage of cases is due to severe organic lesions, most are undoubtedly the result of long continued errors in diet, particularly as to the amount and kind of food eaten.

3. Drugs are of little, if any, use in the treatment of this disease and as a rule should not be used. When drugs are dispensed with, the patient is made to realize the importance of dietetic and hygienic measures.

4. The *amount* of food permitted the diabetic is just as important as the *kind* of food. Even non-starchy foods must be used in strict moderation.

5. Mastication is one of the most important details in the treatment of this disease. Have the patient chew each mouthful of food thoroughly.

6. A mildly alkaline water is the drinking water of choice and it should be used freely. Distilled water should be prohibited.

7. Constipation must be overcome, if necessary by the aid of castor oil and olive oil. Salines and drastic purgatives should be avoided.

8. A moderate mental laziness combined with moderate physical activity is the ideal for the diabetic.

9. If gluten flours are used, they should be most carefully investigated, and their starch content ascertained before they are recommended. Many, if not most, of the gluten flours contain dangerously high percentages of starch.

10. Gluten breads of best quality must be used in moderation.

11. The starch-hunger of the diabetic makes him unreliable when his dietary is under consideration. Keep close watch of him.

12. Diabetes mellitus in children is not necessarily fatal, but a guarded prognosis should always be given.

13. Printed instructions for the patient and the requirement that he keep a dietetic diary are great helps.

14. Coöperation on the part of the patient is essential to successful treatment.

15. The determination and elimination of the acetone bodies (acetone, aceto-acetic acid and β oxybutyric acid) in the urine, is of even greater importance than that of the glucose.

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Dr. W. H. Walters, director of the department of pathology and bacteriology, Evans Institute for Clinical Research, Boston, Massachusetts, writes us that he would be glad to receive information about cases of typhoid fever treated by means of vaccines, from any physician who has had experience, favourable or otherwise, with this form of treatment. A short, blank form for the data required will be sent on request, and due credit will be given in his forthcoming article to each person making a report.

TRAUMATIC ARTHRITIS OF THE KNEE AND ITS EFFECTS

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DURING the last few years great advances have been made in the diagnosis of non-tuberculous chronic diseases, and, as a consequence, also in their treatment. It is only within the last ten or fifteen years that arthrotomy has become a safe procedure, and even now the scepticism of the lay public becomes obvious when one suggests the necessity for exploration of a knee-joint, showing that the laity has a long memory where surgical catastrophies are concerned. Nowadays, however, aseptic technique has reached such a general high-water mark of perfection that the exploration of a knee-joint is undertaken as an every-day occurrence, albeit with a deep sense of responsibility. The natural outcome of operative freedom has been the discovery of several varieties of knee-joint derangement, previously unknown, and this fact, coupled with the tremendous advantage that present-day surgeons possess in good radiograms, as well as by the laboratory study of diseased joints, has enabled us to make a differential diagnosis with a very fair amount of accuracy.

It is my intention to place before you some of the outstanding features of the type of knee-joint that has not received the prominence in literature which is perhaps its due, although Goldthwait and Painter have written most illuminating monographs on the subject. The train of symptoms caused by a variety of changes within the knee-joint has been grouped under the headings of traumatic arthritis, traumatic hydrops, and villous arthritis. This divergence in nomenclature is somewhat misleading, as they all seem to be due to the same causes, and the latter condition seems to insensibly superimpose on the former, if, on the one hand, correct means of treatment be not instituted, or, on the other, metabolic irregularities favour the progress of the trouble.

Read before the Winnipeg Medico-Chirurgical Society, April, 1912.

Knee-joint strain may arise in several ways, the commonest being due to lateral pressure applied by a slip or fall, the internal lateral ligament being the chief sufferer. The same result may be gradually obtained by the incorrect weight-bearing that occurs in flattened pronated feet. I have also seen the condition described by Freiburg as the "relaxed knee," occurring in fast-growing adolescents, where the relaxation is muscular as well as ligamentous.

For the ætiology of this interesting condition it is necessary to go into a few points regarding the anatomy of the joint. The anterior part of the capsule is formed by the patellar tendon, as the capsule is deficient in the upper and front part of the joint. The aponeurotic expansions which pass on each side to bridge the defects between the anterior and lateral ligaments, for all intents and purposes may be regarded as being capsular in origin, though strengthened by fascia lata and surrounding tendons. On the deep surface of the patellar tendon is the infra-patellar pad of fat. This is a large pad of soft fat, which fills up the interval between the femur, tibia, and patella (Fig. 1), and is triangular in form vertically, although it adapts itself to the various forms which the space takes in the different movements of the joint. The pad is separated from the interior of the joint by a covering of synovial membrane, and from its surface a band of this membrane extends backwards and upwards to the intercondyloid notch of the femur, where it is attached. This band is called the ligamentum mucosum, and it is continuous with this band that there runs the investing layer of synovial membrane to the crucial ligaments. The ligamentum mucosum becomes thinned and threadlike at its femoral attachment, but below this it widens out, and towards the region of the infra-patellar pad, to which it is attached below, it is broad and triangular and presents two free margins which run down to the lateral borders of the patella in its lower portion (Fig. 2). These lateral folds are termed the ligamenta alaria, though of course it is obvious that they are merely folds of synovial membrane, and not true ligaments.

The synovial membrane is very extensive and lines the deep surfaces of the various ligamentous structures which surround the joint, and in addition covers both surfaces of the semilunar cartilages, gives a partial investment to the crucial ligaments, and also gives a tube-like prolongation to the tendon of the popliteus. The intimate connexion of the synovial membrane to the various ligaments is of great importance, as it is due to this fact that ligamentous strain is followed by effusion into the joint. If one studies the course of the inferior internal articular artery, one finds that it ramifies in and around the internal lateral ligament, and in very close proximity to the synovial membrane; if there is a rupture of the deep fibres of the lateral ligament, hæmorrhage into the synovial membrane is bound to follow the tearing of the arterial twigs. Again, the fact of the semilunar cartilages being covered on each side with synovial membrane and the connexion between the inner meniscus and the internal lateral ligament, accounts for the effusion which occurs if they are damaged. Repeated synovitis due to any cause which brings an effusion into the joint, will produce after effects which will be detrimental to the synovial membrane itself, to the ligaments, by reason of over-stretching, and to the guardian muscles of the joint, owing to changes of disuetude. The changes in the synovial membrane are most marked around the alar ligaments, for various reasons.

As Tenney has pointed out, the ligamentum mucosum is of service in keeping the synovial covering of the infra-patellar pad tense during extension of the joint, thus obviating any tendency of this delicate structure in part being forced in between the femur and tibia. Tenney states that the fibres of the ligamentum mucosum end in the infra-patellar pad, whilst Pouzat avers that they end in the anterior horns of the semilunar cartilages. The writer examined many knee-joints some eighteen months ago in the anatomical department of the University of Liverpool, and dissected a suitable one to find a reason for this divergence of opinion. It was found that the main attachment of the synovial fold was to the infra-patellar pad, but that some few fibres did become continuous with the anterior horns of the semilunar cartilages, especially the external one. However, on pulling the whole mass upwards and backwards, in imitation of the action of the quadriceps tendon, the main force was exerted on the infra-patellar pad, the attachments to the semilunars being so weak as to have a negligible effect on these structures. A case of villous arthritis recently operated upon proved that this is not always the case, as the hypertrophied alar ligament was so intimately connected with the external semilunar as to make it necessary to remove the anterior portion of the latter in addition to the villous mass. Tenney holds that in formalin-hardened bodies the alar ligament cannot be found; in the majority of cases this is true, but one knee that was dissected shows their presence in a joint that, however, cannot be called normal, the folds being so long as to lie over the anterior half of the semilunar cartilages with the joint in full extension, one tab lying over the internal semilunar cartilage at the junction of the anterior one-third with the posterior two-thirds, the commonest position for cartilage lesions. The interest of this fact, in view of differential diagnosis, is at once apparent.

Let us suppose, then, that, owing to a strain of the knee, there has been an effusion into the joint. There will be stretching of ligaments, and as Griffiths has pointed out, their return to normal is a matter of months rather than weeks, consequently the synovial membrane will become puckered, owing to the close relationship between the two. In addition, owing to the enforced rest, atrophic changes will have occurred in the quadriceps muscle, and, as a result, the ligamentum mucosum will not have its compressive action on the infra-patellar pad that it so ably fulfils with a firmly connecting quadriceps. The infra-patellar pad will now become nipped between the articular surfaces of femur and tibia when the joint is extended, and as a result of this nipping, fresh exudation is produced. A variety of vicious circle is now in full play, and all the necessary elements for the production of the villous arthritis described by Goldthwait are at hand. Should the condition be progressive in nature, due to lack of suitable treatment, further changes may be observed. Hæmorrhages take place into the pad of fat, and these undergo a fibroid change(Fig. 3); these are plainly seen in the accompanying radiograph, and the difference in size between a hypertrophied infra-patellar pad, in a case of traumatic arthritis (Fig. 4), and a normal one (Fig. 5), is seen in the prints taken from cases where the knee-joint had been distended with oxygen, a process which enables us radiographically to see soft parts, both intra- and extra-articular, with great clearness. Owing to frequent injury the synovial membrane becomes elongated into long, finger-like masses simulating villi, and the investing membrane becomes hyperæmic. Microscopically the synovial tags are found to consist of clumps of connective tissue and are richly endowed with blood-vessels. These vessels show signs of perithelial and endothelial hyperplasia, and in some cases show a surrounding mass of small round cells, whereas in others they are completely obliterated by endothelial overgrowth. The villi increase in number as time goes on, and, owing to their friction against one another in movements of the joints, a creaking sensation is elicited on palpation. The irritation of villi rubbing against each other produces an exudation analagous with that due to direct injury by bony pressure. As time goes on degenerative changes take place and tissues of a higher type are replaced by those of a lower variety. The change most commonly seen is fatty degeneration of the villi, so that the ends of the villi are seen to be made up of distinct lipomata. Sometimes a considerable fold may undergo this change, and here we have the formation of what is known as arborescent lipomata. These masses are usually found to one or other side of the patellar tendon, but occasionally they form in the supra-patellar pouch. A lady whose knee was recently opened for this condition displayed an irregular fatty mass as large as one's thumb, in the former position; this was removed with good result. Sometimes calcareous degeneration takes place, and in the folds of membrane, quite apart from articular cartilage and bone, small cartilaginous and bony masses develop. According to Goldthwait, it is in this manner that certain types of joint "mice" are formed. It is necessary to state that the condition is purely the reaction of tissues to injury, or, in rarer cases, to disease, with consequent retrogressive changes, as a similar process is noticed in synovial tubercle, especially in those forms where joint "mice" develop, and in synovial syphilis in children. From the above remarks it is obvious that the amount of villous formation is relatively proportionate to the duration or frequency of trauma, in cases where injury is the predisposing cause, and that many cases of traumatic arthritis clear up without such processes occurring. It is a difficult problem to solve as to where the division between villous change ends and hypertrophic changes of a rheumatoid nature begin, and the mere fact that many cases show progressive signs of the latter condition superimposing on the former, leaves little room for doubt as to the correlation between the two conditions. Wollenburg states that the two conditions are part and parcel of the same disease, and that both are produced by chronic vascular changes, the causative factor being irritation of toxic or traumatic origin. Many cases, presumably villous in nature, show radiographically the circumferential patellar lipping which is the first sign of hypertrophic osteoid changes.

Having followed, as nearly as one is able, the pathological picture, we must here view the condition from the clinical side. The simple traumatic synovitis that receives treatment on correct lines and clears up, we dismiss at once. We now turn to the chronic strained knee, whose synovial membrane has undergone villous change, and one finds that a divergence of symptoms may manifest themselves, according as to whether the tabs are short or elongated. The common train of symptoms is referable to the former condition, but in the latter instance one is very apt to be misled and to diagnose the lesion in the anterior horns of the semilunar cartilage, as one can well imagine. One has seen several examples of this mistake cleared up on the operating-table, where removal of an elongated fatty tab in the vicinity of a cartilage has remedied the condition. As will be seen from the accompanying cases, the symptoms in general are not so acute as when a cartilage is damaged; the onset may be somewhat similar if an internal lateral ligament strain is the principal lesion, but there is no subjective sensation of "something giving in the joint," which is invariably complained of in the other condition. Locking of the joint occurs in both types of case, but where the trouble is synovial it is of a transitory nature and can be always remedied by the patient himself. Exudation follows subsequent damage in both cases, but whereas, in the former condition, it occurs with exercise and no apparent lesion, as for example a long walk, in a cartilage case there is always a history of some mechanical indiscretion which leaves its imprint upon the patient's memory. To quote a case of early villous arthritis,—a male patient strained his knee while driving a golf ball off a slippery tee, synovitis with effusion followed. The limb was rested for a fortnight, and after effusion had subsided another game of golf was played, with the result that effusion returned. This state of affairs persisted for five or six weeks, and so he came for advice. The knee was found to be swollen on each side of the infra-patellar tendon, and the quadriceps was much wasted. On palpating the moving knee, a faintly marked, fine crepitation was elicited. There was pain over the internal lateral ligament, but the patient was certain that no slipping had occurred in the joint or that any locking had taken place at the original injury. A diagnosis of thickened infra-patellar pad with early villous formation and a generalized œdematous condition of the synovial membrane was made. Energetic massage to the quadriceps was advised, and a cage splint, a modification of that described by Howard Marsh (Fig. 6), ordered, so contrived as to allow twenty degrees of movement in the joint, but preventing full extension. The nipping of the synovial membrane that had been occurring without much pain during walking exercise, was now prevented, and the massage toned up the quadriceps and obviated an ineffective mucosal ligament. Full recovery followed, and now, two years after the cessation of the treatment, there has been no recurrence of the trouble. It is only necessary to barely refer to the differential diagnosis between synovial and cartilaginous lesions of old standing. In the former, the circum-patellar thickening becomes more evident and the creaking on palpation becomes the most prominent feature. Where the injury is semilunar in origin, recurrent displacements become progressively easier to produce, although always caused by some slight slip or twist of the foot, which rotates the femur inwards on the tibia and abducts the leg at the knee-joint. Just as the causation becomes easier, so do the after-effects proportionately become less marked, until effusion is most commonly conspicuous by its absence.

Another case is of a lady of thirty-five years, and is of interest in that the two conditions under discussion occurred side by side. The history given was that seven years previously there had been some injury to the knee. Gradual disability came on, which was slight in extent, and consisted of locking, which came on periodically, due to no apparent cause, while walking. This locking was of a transitory nature, but swelling invariably occurred afterwards. Three years ago, after playing golf, the joint became painful and swollen, the pain continuing at night. As a result she was kept in bed for seven weeks. Since that time the limb has never been well, periodic exacerbations having occurred, which culminated a fortnight ago in a definite slipping of something within the joint, owing to a slight fall. On examination, a large, swollen, shapeless knee was found, which apparently contained a little free fluid, but whose synovial membrane was obviously very thick and œdematous. The circumference of the knee round the supra-patellar pouch was two inches in excess of that of the other side. There was inability to fully flex or extend the leg, and apparently the knee never resumed its original size, but remained somewhat pyriform in shape above the lower end of the femur. The *x*-ray (Fig. 7) shows masses of thickened synovial tissue, especially round the infra-patellar tendon. Operation was advised, as it was surmised that the slipping cartilage would help in keeping up the irritation indefinitely. The joint was opened by a vertical incision on the inner side, and it was found that the internal semilunar was detached from its anterior attachment. The joint was absolutely full of old blood-clot, and there was much fibrous change in the synovial membrane, with an exceptional quantity of villous masses. Tufts of these were floating by pedicles, and it was obvious that many of them were constantly lying between the articular surfaces of the femur and tibia. The detached portion of the cartilage was removed, and, the incision being enlarged, the pendulous masses were clipped away with scissors. The wound was, as usual, sutured in three layers. There was a tendency, after a few weeks, for a slight recurrence of the villous formation, but with energetic massage the limb made a good recovery. I have also seen cases, primarily

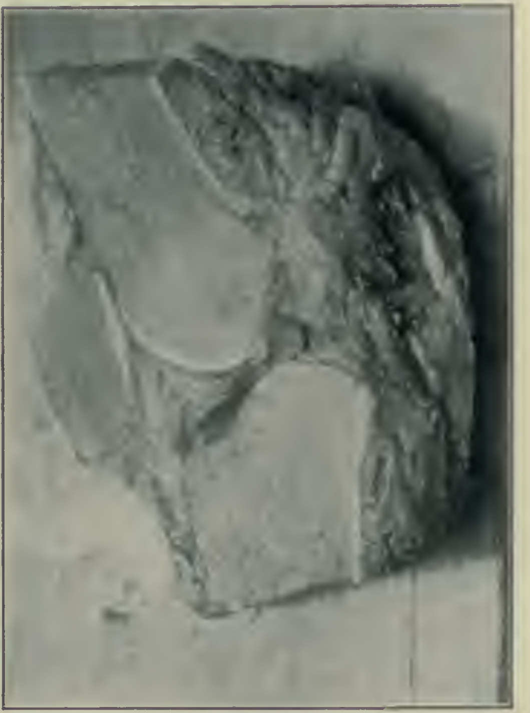

Fig. 1.

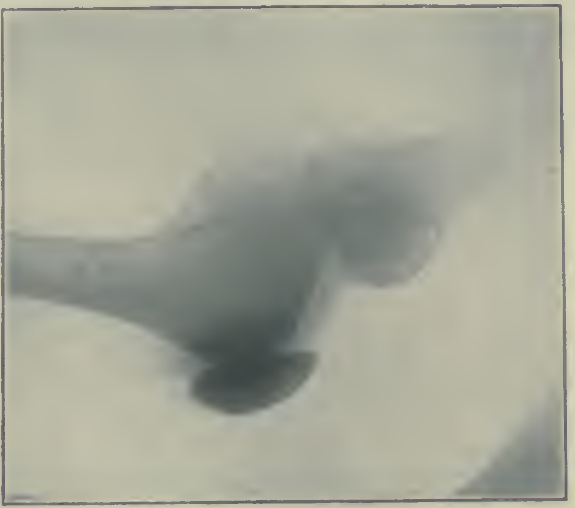

FIG. 3.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

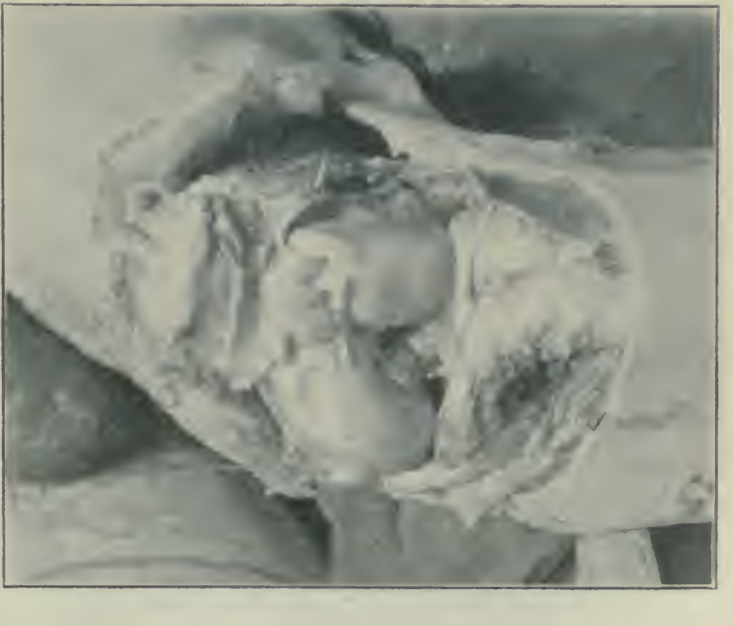

FIG. 2.

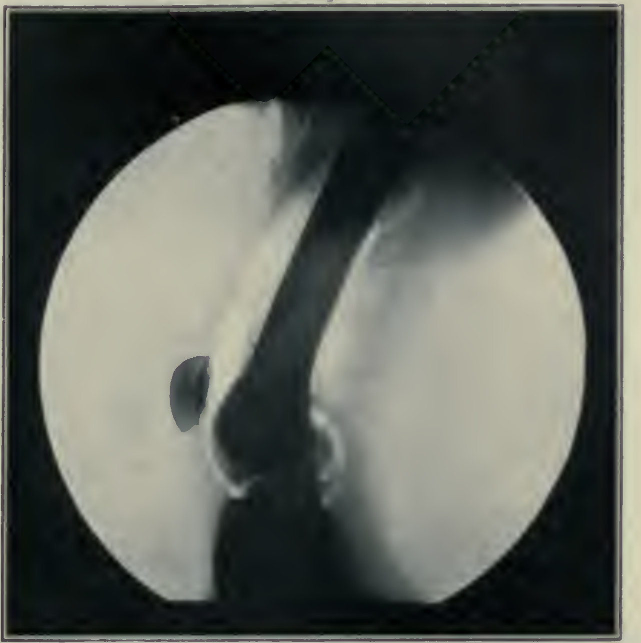

FIG. 4.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

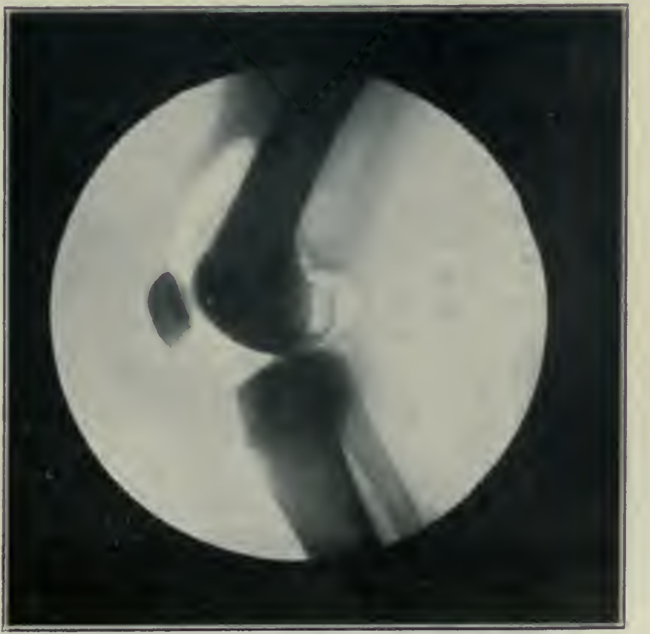

FIG. 5.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

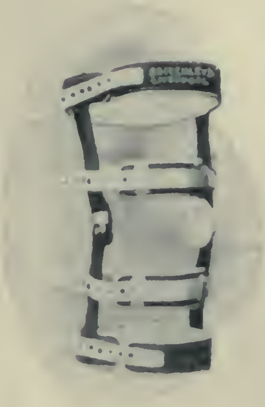

Fig. 6.

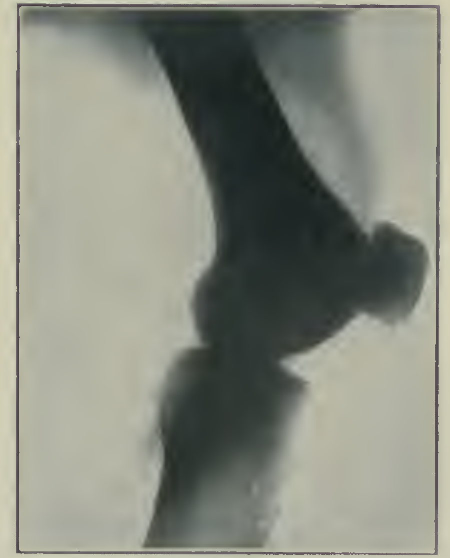

Fig. 7.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

semilunar in origin, become markedly rheumatoid, owing to repeated traumatism. Where operative treatment is for any reason contra-indicated, it is of great utility to apply a cage-splint (Fig. 6) so arranged that the hinge joint locks at thirty degrees from full extension, and giving in the average case about sixty degrees of movement. This splint should be worn day and night, and its object is to prevent the nipping of the infra-patellar pad previously referred to. Combined with the use of the cage-splint, firm and energetic massage to the quadriceps should be practised. In a varying period of time, generally a matter of eight to twelve weeks, more liberty may be given, that is, the hinge can be arranged to lock at twenty or fifteen degrees short of full extension, and if no tendency to exacerbations of symptoms occurs, the splint can be discarded in another month. One has seen very good results follow the use of this mechanical treatment, but one cannot too emphatically reiterate the necessity for keeping the quadriceps muscle in good condition. Occasional counter-irritation—effectively given by means of the actual cautery—at the region of the fat pad, is of use. A long course of hot air treatment by means of the electric oven gives excellent results in many cases by improving the tonicity of the part. The question of operative interference, by clipping off the villous tags, is one which needs consideration, but it is advantageous to reserve it for those cases where by joint-locking we infer that there are well-marked pendulous masses present, or that a lipoma arborescens has formed. Where rheumatoid osteophytic changes have occurred, paring and chiselling operations in the hands of Robert Jones have given poor results, and so have been discontinued in his clinic.

MEDICINE AND ENGLISH LITERATURE

By Edmund Kemper Broadus, Ph.D.

University of Alberta

THE last few years have afforded several reminders that English literature takes a lively, if not always a complimentary, interest in the medical profession.

The medical faddists of Shaw's "Doctor's Dilemma," who run the gamut of panaceas from antitoxin three times a day to greengages half an hour before lunch, constitute only the mildest of satires on the profession compared to the bludgeonings of Shaw's extravagant preface; and now Mr. Robert Herrick in his latest novel, "The Healer," rises to the attack, with an indictment and a solution which are, after all, nothing more than Shaw's preface illustrated in narrative. That all physicians, high as well as low, are in some degrees quacks and hypocrites, and that the only hope of redemption for the profession lies in the abolition of private fees,—this is what Mr. Shaw has already told us to the tune of forty or fifty pages. The promptness with which Mr. Shaw's complaint has been echoed and reiterated on this side of the Atlantic gives food for thought to the philosopher, but it may well serve also to remind the student of literature of the ancient grudge of literature against medicine.

Long before Molière set the fashion, comedy was wont to burlesque the follies and satirize the foibles of the physician. In the mediæval St. George folk-plays, the doctor is already a ridiculous figure, riding in, sometimes on a hobby-horse, sometimes on the back of one of his patients, and while he boasts of his skill, bringing St. George back to life by exhibiting a bolus. Elizabethan drama constantly fell foul of him. The Doctor of Physike, who is called in to prescribe for the madness of Lady Macbeth, has at least the merit of sincerity.

> "This disease is beyond my practice. . . .
> More needs she the divine than the physician,"

but ordinarily Shakespeare's physicians are Dr. Caiuses, good only for "the abusing of God's patience and the King's English." Ben Jonson never lets slip the opportunity to satirize the profession.

Volpone's indictment of the physician anticipates in all essential particulars the bill of complaints which Shaw draws up as a preface to the "Doctor's Dilemma." "He has no faith in physic," says Mosca of his master, Volpone:

"He does think
Most of your doctors are the greatest danger
And worse disease to escape. . . .
No sir, nor their fees
He cannot brook: he says they flay a man
Before they kill him. . . . .
And then they do it by experiment
For which the law not only doth absolve
But gives them great reward: and he is loth
To hire his death so."

But Jonson as the professional exploiter of human follies is naturally even more concerned with the quack and the magician. The latter, indeed, if we are to accept comedy as an image of the times, found himself more on the road to preferment than the legitimate physician.

"He's a rare physician, do him right," says Sir Epicure Mammon,
"An excellent Paracelsian, and has done
Strange cures with mineral physic. He deals all
With spirits, he; He will not hear a word
Of Galen, or his tedious recipes."

Similarly, Marlowe's Faustus, although through his prescriptions whole cities have already

"Escaped the plague
And thousand desperate maladies been eased,"

feels that he is still "but Faustus and a man." If "this profession were to be esteemed," then must the physician turn magician, and legitimate therapeutics give place to miracles.

It would almost seem, indeed, that the emphasis of the professional medical man upon incantations and natural magic left the field of legitimate healing open to the heroines of romance. "For I tell thee, Tristan, this wound shall be thy death, for the sword was poisoned with a deadly poison, and no leech nor leechcraft can heal thee, saving only my sister Iseult, the Queen of Ireland. She knoweth the virtues of all plants, and many secrets of healing; she can heal thee, but none other on earth can."

Nor were the fictitious royalties of romance the only rivals of the doctors: for it will be remembered that the English kings healed for the "King's evil" from the days of Edward the Confessor to the time when Queen Anne "touched" the future great cham of literature, Samuel Johnson.

Meanwhile the devotees of surgery, to whom the privileges of magic were denied, eked out their practice with humbler expedients. In the medical schools of the middle ages the actual handling of surgery was frequently relegated to the village barber, who was usually village dentist and village musician as well. The teeth which he had drawn were not infrequently hung up at the window on lute-strings; the parti-coloured barber's pole was painted after the fashion of a surgeon's bandage, and outside of the door, to indicate his double function of barber and surgeon, hung "a copper basin on a prickant spear." "Yonder his mansion is," says Mine Host in "The Knight of the Burning Pestle," as he directs Ralph to the den of the "giant Barbaroso";

> "Lo, where the spear and copper basin are!
> Behold that string on which hangs many a tooth
> Drawn from the gentle jaw of wandering knights."

The cutbeards of Elizabethan drama are ready alike with razor, scalpel, or physic, and are also the stock intermediaries of intrigue. Even in the eighteenth century, medicine had strange bedfellows. Partridge, the almanac-maker, who describes himself as an "honest physician," was a cobbler by trade, and is characterized, in a pamphlet written in his behalf probably by the dramatist, as "an eminent practitioner in leather, physic, and astrology."

The eighteenth century with its fresh heritage from the great discovery of Harvey, with such men as Sydenham and Sir Thomas Browne to look back to, and with its own Arbuthnots, and Garths, and Akensides handing on the medical tradition of honourable accomplishment in letters, might well have portrayed the physician with respect to its creative literature; but comedy found the burlesque doctor made to its hand by Molière, accepted the stage quack as unquestioningly as it had already accepted the *miles gloriosus*, and in such comedies as Fielding's "Mock Doctor," and Cobb's "Doctor and Apothecary," out-Molière'd the master *in facetiæ* at the physician's expense; and prose fiction contented itself with the Dr. Slops, the Partridges, and the low quacks and imposters who infest the pages of Smollett.

Satirical and burlesque pictures of the physician abound in nineteenth century fiction; but Charles Reade is the only one who seems, like Molière, to have singled them out as the special object of malevolence. His portraits are too long for transcription, but the phrases in which he hits off the foibles of the profession are often neatly turned and quotable,—as in his characterization of one doctor as a "mellifluous pleonast, who oiled his prescriptions with fresh polysyllables." In the novels of Dickens the general practitioner, even when he assumes the venerable dignity of Doctor Manette in "The Tale of Two Cities," carries his profession only as a sort of shadowy accessory. I fancy more than one physician in reading the novel must have smiled at the idea that Doctor Manette, after being rescued, aged and mentally clouded, from the oblivion of the Bastille, should have been able to "earn as much as he wanted" by the practice of his profession The surgeon, on the other hand, usually brings his profession with him into the centre of the stage, but he remains a sawbones, a comic and usually disreputable figure, of whom Bob Sawyer may stand as typical.

It is not surprising that in Dickens, with his vast canvasses, physicians are fairly numerous; but in Thackeray medicine is almost completely crowded out by the other two learned professions. One is inclined to wonder a bit at this, too, for several of Thackeray's warmest friendships were with physicians, to one of whom "Pendennis" is dedicated in words which glow with the gratitude of a convalescent recently rescued from death. And yet the practitioner in the pages of Thackeray concerning whom the present writer at least has the most lively memories, is one from the pages of that very novel; one who was most anxious to bury his professional past in oblivion, and be addressed not as Doctor, but as Squire. And this ancestral Pendennis, ex-apothecary, ex-doctor, conveniently sketched in with the kindly condescension which Thackeray sometimes allowed himself, and quite forgotten when the author gets down to the serious business of the novel, is typical of the other physicians in Thackeray. Some of them, it is true, are on a much more assured social footing than the former dispenser of salts and plasters, but all of them are there only to serve their casual turn, and the author has other game afoot than to develop these occasional functionaries into finished portraits.

Of the great Victorian novelists, it remained for George Eliot to give the profession a central place in one of her novels, and to produce a character which would be convincing alike to the physician and the layman. Lydgate, says Dr. S. Weir Mitchell, "is all over the physician, his manner, his sentiments, his modes of thought, but he stands alone in fiction." Lydgate is a wonderful picture, not merely because his idealism and devotion, under adverse conditions, to the literature of his profession strike a responsive chord in the breast of such a physician as Dr. Mitchell, but because these traits are so melted into Lydgate's daily life that they are the man; and the study of his degeneration is precisely the study of the deterioration of his professional self under a barren and unsympathetic environment.

More recent fiction has been productive of many studies of the profession, such as Miss Jewett's "The Country Doctor," and W. D. Howells' "Dr. Breen's Practice." The last decade or two has seen also the emergence of the woman-physician as a type in fiction, but there has been nothing so comprehensive or so convincing as Lydgate since "Middlemarch" came from the press. When some novelist appears worthy to take up the pen which George Eliot laid down, an opportunity awaits him in a territory through which Kipling has blazed the way in "Marklake Witches,"—the presentation in fiction of some of the great physicians of former times, in the full stress of their epochal lives. What a "story" there would be, for example, in the career of Harvey, son of a Kentish yeoman, adviser and physician of royalty, standing in the transition moment between ancient and modern medicine, declaring his discovery of the circulation of the blood in words that have not lost their fine ring throughout the centuries: "But what remains to be said upon the quantity and source of the blood which thus passes, is of a character so novel and unheard of that I not only fear injury to myself from the envy of a few, but I tremble lest I have mankind at large for my enemies, so much doth wont and custom become a second nature. Doctrine once sown strikes deep its root, and respect for antiquity influences all men. Still the die is cast, and my trust is in my love of truth and the candour of cultivated minds."

How the historical imagination, like a highly sensitized plate, could catch and register the receding faces of that throng of sixteenth century quacks and impostors, panderers to the ancient mystery of medicine, as they peer over the line drawn by this demonstrator of the fundamental principle on which all modern knowledge of the human body rests! And with what heightened satisfaction would the reader of such a story detect in the literature of Harvey's own day the ferment of interest on the subject, which could induce the poet Donne, for example, to introduce into one of his elegiac poems the query:

"Know'st thou how blood, which to the heart doth flow,
Doth from one ventricle to the other go?"

or encourage Harvey's fellow-Kentishman and fellow-Cambridge student, Phineas Fletcher, to make the conception of the human body as an island bounded by streams of blood the theme of the long Spenserian poem, "The Purple Island"!

Or what a theme in Jenner's discovery of vaccination, with all the superstitious follies of the riotous crowds, who opposed a blessing so disguised; and with poor little eight-year old James Phipps preserved to history as the first subject of experiment!

And what possibilities for historical fiction, too, in some of the men whom a more ephemeral brilliance has kept in memory—Arbuthnot and his circle of wits and literary geniuses; Heberden, Dr. Johnson's "Ultimus Romanorum"; Dr. John Brown, of Edinburgh, the author of the one-time famous "Brunonian theory"; or that other Dr. John Brown to whom the world is indebted for "Rab and His Friends"; or Mark Akenside, butcher's son, poet, and physician, distinguished alike for the richness of his language and the meanness of his character, and pilloried already in the pages of "Peregrine Pickle."

Studies such as these would go far towards recompensing medicine for the scurvy treatment which literature has been disposed to accord it; but the debt of literature to medicine is too various to be readily repaid. Not the least of these obligations is the matter of vocabulary.

The essence of literature has always been the analysis and interpretation of character; and English literature, prior to the seventeenth century, borrowed from contemporary medicine a mode of thought and a system of terminology which became the universal literary language of characterization. The doctrine of humours, which Hippocrates had fashioned and which Galen had developed by means of the four elements, hot, cold, wet, and dry, established itself in English poetry from Chaucer to Milton as the regular means of portrayal of disposition, temperament, and mood. In the eighteenth century, the melancholy humour of Shakespeare's day gave place to the spleen—a general medico-literary term for the vapours, the blues—in short, for all those combinations of physical and mental discomfort which proceed from a disordered stomach and a perverted imagination. Pope's picture of the Cave of Spleen, where the Goddess

. . . . "Sighs forever on her pensive bed,
Pain at her side and Megrim at her head,"

is properly balanced with Matthew Green's famous prescription for the cure of the disease—

"Fling but a stone, the giant dies.
Laugh and be well."

Or again, the word nerve, after supplying the sixteenth and seventeenth centuries with the adjective nervous, meaning sinewy, and the eighteenth and nineteenth centuries with the same adjective, meaning easily excitable, and therefore weak, has completed the cycle by becoming the modern slang synonym for impertinence.

Meanwhile, through the crystallization of metaphors, we retain memorials of the ancient fallacies concerning the human body. "My reins," it is said in Proverbs, "shall rejoice when thy lips speak right things." "Thou thing of no bowels," says Thersites to Ajax in Shakespeare's "Troilus and Cressida." "Joseph made haste," we are told in Genesis, "for his bowels did yearn upon his brother"; and we find the quaint and witty divine, Thomas Fuller, describing "Bloody Bonner, that corpulent tyrant" as "full of guts but empty of bowels." We still "learn by heart," though science has long since given over the idea that the heart is the seat of memory. The same organ rests secure as the seat of passion, though Phineas Fletcher, with classic precedent, tried to make out a case for the liver as the throne of mild affection, and Charles Lamb, in one of his most delicious passages, has at least recognized the existence of other claimants for the honour. "What authority we have," says Elia, "in history or mythology for placing the headquarters and metropolis of god Cupid in this anatomical seat rather than in any other is not very clear; but we have got it, and it will serve as well as any other. Else we might easily imagine, upon some other system which might have prevailed for anything which our pathology knows to the contrary, a lover addressing his mistress, in perfect simplicity of feeling, 'Madam, my *liver* and fortunes are entirely at your disposal,' or putting a delicate question, 'Amanda, have you a midriff to bestow?' But custom has settled these things, and awarded the seat of sentiment to the aforesaid triangle, while its less fortunate neighbours wait at animal and anatomical distance."

Finally we have the Elizabethan, John Lyly, summing up a whole anatomy of misfits in a single sentence—"How say you, Favilla, is not love a lurcher [thief] that taketh men's stomachs away that they cannot eat, their spleen that they cannot laugh, their hearts that they cannot fight, their eyes that they cannot sleep, and leaveth nothing but livers to make nothing but lovers?"

But if English literature has incurred chance obligations in the way of borrowings from the vocabulary of the doctors, it is under a far more considerable obligation from the direct literary contributions of the doctors themselves. From generation to generation the profession has included many who, like John Brown's ideal physician, "live in the world of letters as a freeholder," and believe that "their profession and their patients need not suffer, though their *horæ subsecivæ* are devoted occasionally to miscellaneous thinking and reading." The achievements of these men are too comprehensive to be dealt with in this brief compass, and too familiar indeed to require more than mention; but it is worth while to remember at least that Thomas Linacre, one of the great classical scholars and leaders of the English Renaissance, was the physician of Henry VIII; that Lodge, the Elizabethan novelist and poet, spent the latter part of his life in the practice of medicine; that Locke, the author of the "Essay concerning the Human Understanding," was a physician and practised privately; that some of the ablest and most eloquent prose in the language has been left to us by the physician, Sir Thomas Browne; that Garth and Akenside and Arbuthnot wrote notably in their day; that one of the best novels, two of the best comedies, and some of the best poetry in the eighteenth century, were written by the physician, Oliver Goldsmith; that one of the most prolific and vigorous novelists of the eighteenth century, Tobias Smollett, practised medicine; that one of the most beautiful and enduring of all short stories, "Rab and His Friends," was written by a physician, Dr. John Brown; that poets as diverse as Crabbe and Keats emerged from the study of medicine into the worship of the Muse; that a physician—and one of the leaders of his profession—Dr. Oliver Wendell Holmes, has endeared himself wherever the English language is spoken, by the grace and sympathetic humour of his poetry and essays; that one of the most successful novelists of our own day is the noted physician, Dr. S. Weir Mitchell; and that no man who writes to-day has a more practised pen and a purer style than the master-physician, Sir William Osler.

Of all these men, who have contributed with varying degrees of distinction to English literature, it is curious to observe that Dr. Holmes alone has, so to speak, superimposed his vocation upon his avocation, and keeps us constantly reminded that it is a medical man who holds the pen. Browne loved to drift into an *O Altitudo*, where the materialities of medicine would have been out of place; Goldsmith never seemed to care enough about his profession to make literary capital of it; but Holmes fashioned his medical knowledge into prose fiction, into essays, into poetry—and fashioned it so deftly that his works constitute the immortal meeting-ground of medicine and English literature. "The universe swam in an ocean of similitudes and analogies" for Dr. Holmes; and if it was the pathologist who wrote "Elsie Venner," it was the biologist who coined the immortal similitude of the "Chambered Nautilus." What, moreover, could surpass the delightful effrontery of that passage in the "Autocrat," where the doctor discovers that the young lady is in love because her breathing becomes *thoracic*, or that other where the aspirations and passions of his youth become confused in mellow reminiscence with his first dabblings in chemistry —"orange-coloured fumes of nitrous acid and visions as bright and transient; reddening litmus-paper and blushing cheeks;—*eheu!*

'Soles occidere et redire possunt'!

but there is no reagent that will redden the faded roses of eighteen hundred and——"

There was a moment in the closing years of Dr. Holmes's life when he was compelled to balance these two things, his medical achievements and his literary creation, over against each other. It was Dr. Osler who forced the issue by writing a letter to Dr. Holmes, asking which he valued more, "the 'Essay on Puerperal Fever,' which had probably saved many more lives than any individual gynæcologist, or the 'Chambered Nautilus' which had given pleasure to so many thousands."

"I think I will not answer the question you put me," wrote Dr. Holmes in reply. "I had a savage pleasure, I confess, in handling those two professors. . . . But in writing the poem, I was filled with a better feeling—the highest state of mental exaltation and the most crystalline clairvoyance, as it seemed to me, that had ever been granted to me. . . . There is more selfish pleasure to be had out of the poem—perhaps a nobler satisfaction from the life-saving labour."

So spoke the innate modesty which always went hand in hand with the good doctor's frank liking for the things that were his. Explicitly the question remained unanswered, but who shall say that the soul of the doctor did not answer it as we should have done, or that the scales fluctuated long when medicine and literature were thus weighed in the balance?

Case Reports

RADIUM AND AGE

IN the August number of the JOURNAL, Dr. G. Sterling Ryerson gives an interesting resumé of his experiences with radium, in which he makes the following statement: "My experience is that very old persons do not do well with radium. I shall hereafter shun patients of *eighty* years and upwards."

I have had nearly three years' experience in the use of radium, and, curiously enough, my most convincing case as regards the important therapeutic value of the new physical agent, has been in an old lady well above eighty. The following is a brief history of the case:

The patient, an old lady eighty-six years of age, had a large fungating growth arising from the upper and left side of the nose near the inner canthus, completely covering the whole of the eye and extending well down the middle of the cheek. The growth implicated the nasal side of both eyelids. The mass bled very easily, the patient occasionally suffering from sharp attacks of hæmorrhage. The growth had its origin in a small pigmented mole which was irritated. In spite of various forms of treatment, such as cauterization and the use of arsenic paste, it grew steadily worse, until, after eight years, it had obtained its present dimensions. During the last few months it had made very rapid progress.

The growth clinically was what one would classify as a chronic epithelioma without glandular involvement. On account of the patient's refusal, a microscopic examination could not be made.

The case was treated with three radium apparatuses, two containing 80 mg. and 20 mg., respectively, of radium bromide of 500,000 activity, the third 100 mg. of 50,000 activity.

Under the influence of the radium radiations, the growth gradually disappeared, until, six months later, there was nothing left of the original disease save a slight nodular thickening surrounded by some pigmented scar tissue near the inner canthus of the eye. The manner in which the growth vanished reminded me very much of the action of potassium iodide on a gumma.

It is now eighteen months since the last application of radium was made, and there has been no recurrence. I may add that the old lady seemed fully ten years younger than she really was.

Vancouver. FERNAND L. DE VERTEUIL.

SEROUS MENINGITIS, CHOKED DISC AND MULTIPLE POLYNEURITIS OF CRANIAL NERVES IN A CASE OF A YOUNG ALCOHOLIC SMOKER

THE following case report is of interest, not only to the laryngologist but also to the ophthalmologist and the neurologist. This is owing to the fact that the patient under observation suffered from blindness, deafness, total paralysis of the palate, and laryngeal hemiplegia as a result of intoxication from alcohol and tobacco. There developed, likewise, serous meningitis and choked disc. We have tried to find in medical literature a similar case, but in vain. We think that this intoxication with its symptom complex is, if not unique, at least extremely rare.

Case report. O. L., aged twenty-three years, was brought to us at the Hôtel-Dieu, Montreal, on April 22nd, 1909. He informed us that after having imbibed a large quantity of alcohol and having smoked a great deal, he became suddenly blind, that his hearing became impaired, and that, on eating, food regurgitated by the nostrils. His family history showed that his father enjoys excellent health, and his mother died of pulmonary tuberculosis. Apparently there is no nervous diathesis.

Apart from ordinary childhood diseases our patient never suffered from any malady other than those produced by alcohol and tobacco. From the age of nineteen he smoked and drank immoderately. From twenty to twenty-three he grew worse, drinking sometimes thirty glasses of gin and inhaling seventy-five cigarettes a day. During these three years, he was subject to epileptiform attacks, which came on sometimes twice in twenty-four hours. After these attacks the patient would take a few weeks' rest and then recommence his alcohol and tobacco excesses with renewed vigour.

A year ago, at about the same date, he had a slight touch of toxic amblyopia, which gradually disappeared. His constitution is very robust, and his digestion excellent; and it was owing to this that he resisted so long.

Towards the end of March, 1909, after ten days' excesses in tobacco and alcohol, our patient began to complain of headaches. These increased steadily. He noticed in the first week of April that his sight was not as good as before. After three days, during which he drank and smoked enormously, he found, on the morning of April 19th, that he was stone blind.

During these periods the patient drank only gin, never methylated spirits. The cigarettes were of the Sweet Caporal brand, which were smoked and inhaled.

On April 20th he could see nothing; on the twenty-first he began to see a little. There was vomiting. No constipation, chills, delirium, or convulsions.

Although there was no buzzing of the ears, his hearing was less clear than before. On the twenty-second, when we saw the patient for the first time, he found on trying to eat that the food regurgitated through the nostrils.

On examining the eyes we found that the pupils were dilated, but reacted slightly to light. The ophthalmoscope showed slight double optic neuritis with distended blood vessels. Otherwise, the fundus was normal. At a distance of one metre the patient could count fingers with either eye. The muscles of the eye worked well. No nystagmus. The sensitiveness of the conjunctiva and cornea was normal. Anterior rhinoscopy showed on the left side a deviation of the septum, and on the right hypertrophic rhinitis. No anosmia was present.

On examination of the pharynx we found paralysis of the palate, which had dropped symmetrically. The voice was nasal. Sensibility was not impaired. Considering the ætiology of the affection, electrical examination to complete the diagnosis was considered unnecessary. Posterior rhinoscopy showed hypertrophy of the posterior ends of the turbinals. The tongue, as regards motility, sensibility, and taste, was normal.

On examining the larynx we found paralysis of the right posterior crico-arytenoid muscle. The corresponding vocal cord was fixed in a median position. This explains the fact that the voice was not changed. The right arytenoid was slightly tilted forwards. The sensitiveness of the larynx to a probe remained normal. There was no pertussis-like cough, no tachycardia. No change in the motility of the sterno-mastoid or trapezius. The outer ear and tympanum were normal on each side. Although deaf, the patient heard no buzzing noise. At a distance of two metres only, he could hear a watch which should have been heard at six metres. Tests made with whispering voice corresponded in results with the tests made by the watch. The Weber test was normal, and the Rinne test positive. Gelle's test also was positive, and Schwabach's test showed shortening. Barany's hot water test showed that there was no lesion of the labyrinth.

On examining the face we could detect no trouble, either motor or sensory. The temperature was 37·7° centigrade, the pulse 65.

Apart from headache, the patient complained of stiffness of the back of the neck. Kernig's sign was positive. All the other organs and reflexes were normal. No paralysis or symptoms of hysteria, and no signs of tuberculosis or lues. The urine was normal on analysis.

As choked disc was observed, a lumbar puncture was indicated. This was performed at once, and about 20 c.c. of spinal fluid, which was under light pressure, was withdrawn. Examination of this fluid showed a fairly large number of lymphocytes and polynuclears with a predominance of the latter.

The symptoms, taken collectively, allowed us to make a diagnosis of serous meningitis and multiple neuritis of the cranial nerves brought on by alcohol and tobacco poisoning. My *confrere*, Dr. Dubé, followed the case with us, and we found it of great interest.

In order to allow the patient to eliminate these toxins as quickly as possible, we prescribed milk diet, a cup of hot water early each morning, injections of sulphate of strychnia—ten drops of a one per cent. solution per day, and the application of ice to the head.

The effect of the lumbar puncture was to improve his eyesight the following day, but as the headache did not appear to subside quickly enough, another lumbar puncture was performed. The intradural pressure was marked, though not so great as on the first puncture, and examination of the liquid showed it to be the same as before.

May 1st. Since yesterday the headache has disappeared, likewise the vomiting, which was never a marked feature. Temperature, 37·3°. It has not been higher than 38° since the beginning of the illness. Bowels move regularly. The stiffness of the neck has disappeared and Kernig's sign is no longer positive. Vision without correcting glasses has increased to $\frac{1}{4}$, and the disc has improved in appearance. There is no central scotoma and colours are distinguished normally. The hearing, however, remains the same. There is no improvement in the hemiplegia of the larynx, or in the paralysis of the soft palate, and feeding is difficult.

May 8th. The papillary œdema and the circulation of the fundus have improved. Refraction shows:

R.E.+0·50+0·25 105° $V=\frac{1}{2}$.
L.E.+0·50 120° $V=\frac{1}{2}$.

The patient can hear a watch at a distance of three metres.

Slight movement of the palate and right vocal cord. Temperature and pulse normal.

May 15th. The disc is dull and the œdema has disappeared. Vision with glasses is $\frac{2}{3}$. A watch can be heard at a distance of 4·50 metres. The soft palate on both sides is relatively mobile, and the right vocal cord dilates fairly well.

May 25th. The patient is discharged from the hospital perfectly well. His eyes, ears, palate, and larynx are now in a normal state, and these organs have again acquired the maximum of their physiological functions.

The report which we have summarized merits, we feel, a brief consideration. Serous meningitis described for the first time in a thorough manner by Quincke in 1893, has not been accepted by all physicians. It is not our intention to attack or defend the argument for or against this disease. However, the presence of the symptoms we have described, headaches, vomiting, Kernig's sign, stiffness of the muscles of the neck, increased pressure of the intra-dural liquid, and the presence of a fairly large number of lymphocytes and polynuclears in this liquid, makes it difficult, we think, to deny the existence of meningitis in this case. As during this malady there was only very slight rise of temperature, as the symptoms were mild, as no microbes could be found in the intra-dural fluid, and as the patient was quite well of his meningitis after an illness of only eight days, we are forced to classify it as being serous. The nicotine, and especially the alcohol, absorbed in great quantities by a subject already intoxicated by them, not only affected certain cranial nerves, but also caused an increase of the cerebral fluid and the consequent symptoms. Moreover, it would be difficult by any other hypothesis to explain the presence of this meningitis, and the rapidity with which it improved; the disappearance of the polyneuritis after the elimination of the alcohol and nicotine also makes us accept the above explanation as the most probable one.

The eyes are of great interest. If we go back a year, we find, according to the patient's story, that he already suffered from toxic amblyopia, which was not severe, and which cleared up without treatment. When we first examined him, his sight was very bad, as he could count fingers at a distance of only one metre. However, the ophthalmoscope could show no lesion of the fundus, except an inflammation of the disc of medium intensity. As this affection alone has not usually the effect of producing symptoms so alarming from the point of view of the sight, and especially as the patient was blind during two days' time, we must find a cause other than œdema of the disc to explain this passing blindness and this amblyopia, abnormally great in proportion to the papillary œdema. A very careful examination allows us to affirm that this is not a case of hysteria. As it would be extremely unlikely that an embolism of both central arteries of the retina coexisted, there is no means of explaining this blindness—apart from injury and poisoning by methylated spirits—other than to admit that besides the inflammation of the disc, there was a very acute intoxication of the optic centres. Thus, our patient, after absorbing a great quantity of alcohol and nicotine, during three days, awoke on the fourth day stone blind. During the following two days the elimination began, the nerve centres regained their functions, and the eyesight returned to some extent. In the following days, when all the poisons had left the system and the discs had regained their normal appearance, and when a quantity of cerebral fluid had been withdrawn which, by the increase in pressure, had compressed the optic nerves, the eyes gradually, in five weeks, returned to normal. We may remark that during the whole course of this affection the patient never suffered from central scotoma. He had no difficulty in recognizing colours, which is contrary to what we always find in cases of toxic amblyopia when the optic nerve alone is affected.

As regards the deafness, we believe that there existed a neuritis of the auditory nerves, which was also of alcohol and nicotine origin. The examination of the tympanic membranes was negative, and acoumetric tests made it evident that the middle ear was intact. The patient never experienced buzzing or vertigo, the Eustachian tubes were normal, and Barany's tests proved that the functions of the labyrinths were perfect. As this deafness, characterized only by a sensation of blocked ears, without other auditory symptoms, was met with in a non-hysterical patient who had never suffered from his ears, and whose condition improved gradually with the elimination of the alcohol and nicotine poisons, and concurrently with the disappearance of the other symptoms of polyneuritis, it would be difficult in this case not to accept the hypothesis of toxic neuritis of the auditory nerves. Perhaps the auditory centres were affected, as the deafness came on rapidly at the same time as the blindness.

If we now analyse the mechanism of the total paralysis of the soft palate together with hemiplegia of the larynx, with no other motor troubles, we see that our patient cannot be classed with those presenting the symptoms described by Avellis, Schmidt, Jackson, and Tapia. Granting that the whole of the soft palate and the right side of the larynx are affected, we find ourselves in the presence of a modified Avellis. The spinal accessory nerve, which innervates these two sets of muscles, was, on the right side, affected through a sufficient portion of its length to produce the symptoms of Avellis. On the left side, the other spinal accessory was affected only in the part situated above the plexiform ganglion, the pharyngeal branch of the palate being alone affected, and the branch going to the larynx remaining untouched by the inflammatory process.

As the right vocal cord was fixed in a median position, and as the left moved normally, the voice never changed.

Casting a quick glance over the most usual causes of paralysis of the cranial nerves, the following are found to be the most frequent: syringomyelia, poliencephalitis, bulbar apoplexy, tabes, tumours of all kinds, trauma, tuberculosis, and syphilis in its different forms. As regards intoxications, medical literature contains few cases, which makes this report of interest from that point of view. As our patient suffered from none of these affections, and as the paralysis came on following great excesses in alcohol and tobacco, concurrently with other phenomena of intoxication of the same nature, we conclude that we were in the presence of a toxic peripheral neuritis of the right spinal accessory, together with the ascending branches of the palate of the left spinal accessory. The rapidity with which these symptoms cleared up is another strong argument in favour of this opinion. Considering the general condition of the patient it is astonishing that more cranial nerves were not affected.

A careful and minute examination of the sensibility to touch and heat showed no signs of trouble, but of course it is well-known that sensory fibres are more resistant to inflammation than motor fibres.

To resume, a young man of twenty-three, a great drinker and smoker for the past four years, suffered from occasional epileptiform attacks of toxic origin. Towards the end of the fourth year, following an immoderate abuse of alcohol and tobacco, the patient awoke one morning stone blind and deaf, and showing symptoms of meningitis which dated back about three weeks. Three days later paralysis of the palate and one-half of the larynx came on. Five weeks' treatment succeeded in clearing out these toxins and curing the patient. In conclusion, we wish again to call attention to the strange and complex phenomena met with in this young alcoholic smoker, the serous meningitis, the ocular and auditory lesions, and the modified Avellis symptoms.

Montreal. J. N. Roy.

Editorial

A FEDERAL DEPARTMENT OF PUBLIC HEALTH

DOMINION registration has at last been accomplished, giving the duly qualified physician the right to practise in any part of the Dominion, without the vexatious necessity of passing a separate examination for each province in which he may desire to exercise his profession. For this boon, as everybody knows, the profession owes a large debt of gratitude particularly to Dr. Roddick, whose untiring efforts, in the face of disappointment and temporary defeat, have been crowned finally with success.

There is always more to be done. And the next reform in the sphere of politics which the profession has a right to expect, will be the establishment of a federal board of health. A resolution urging this reform was passed unanimously at the recent meeting of the Canadian Medical Association at Edmonton; and at the inaugural meeting of the Canadian Public Health Association at Montreal in December last certain recommendations were made with this in view. Indeed, at this latter meeting the Minister of Agriculture, the Hon. Mr. Burrell, speaking, as he was careful to point out, unofficially, expressed it as his conviction that the time had come when the public health, even if it did not demand a portfolio, should at least have a full-fledged department in the federal government. The Secretary of State also, the Hon. Dr. Roche, has long been an earnest advocate of the proposed reform, so the movement does not lack powerful friends at court.

We would not accuse the Dominion government of having neglected, heretofore, the public health, which, as Disraeli once remarked, should be the first consideration of a statesman, but it is justly maintained that there is wide scope in this matter for the enlargement and correlation of its activities, which are at present scattered amongst various departments. In the year 1910 the government expended for the public health service the sum of $377,485, divided amongst various departments, as follows: the Department of Agriculture, $146,781; Indian Affairs, $125,121; Interior, $66,969; and Inland Revenue, $38,613. The Department of Agriculture controls the quarantine service, with the Director-General of Public Health at its head, and also Health of Animals and Live Stock Branches; that of the Interior has to do with immigration; while the Inland Revenue Department maintains the government laboratories. Undoubtedly, the inclusion in a single department of these separate subdivisions would make for economy and increased efficiency. During the last session a committee of Parliament, of which Dr. Chabot, M.P., was chairman, sent to the Premier a memorandum pointing out "the grave danger to which the people of Canada are exposed by reason of the incompleteness of suitable laws relating to the public health, and of the indifferent enforcement of such laws as are now in operation," and bringing to his attention "the urgent need of the establishment of a separate department of public health."

Canada lags lamentably behind other progressive countries in the matter of meat inspection. It is true that no meat can now be exported, or transported from one province to another, without the guarantee of the government stamp, but in many parts of the country the consumer has no assurance that the meat he buys is free from taint. There is immediate need of an efficient, uniform system of inspection for the entire country. Again, there is a class of scientific preparations, namely, the viruses, anti-toxines, bacterial vaccines, etc., for which an ever-widening use is found in the detection, prevention, and cure of diseases in man and animals. It is very important that these should conform to definite standards; but at present the government exercises no supervision or control over their manufacture or sale, except in the case of the few now prepared at the biological laboratory of the Department of Agriculture.

Assuredly a Dominion Board of Health would find much useful work to do. Amongst the matters suggested by Dr. Chabot's committee as coming within its scope are the following: a thorough comparative study of the various provincial health acts, with a view to codification and uniformity, the quarantine laws relating to infectious diseases, particularly, to be made uniform throughout Canada; regulations regarding disinfection of railway cars and public conveyances; more efficient laws as to the purity of food, the prosecution of offenders in cases of adulteration, and the standardizing throughout the country of the quality of milk sold to the public, and also the conditions of its production. In the matter of tuberculosis they recommend Dominion registration of all cases, supervision of all sanatoria, and the establishment of one or two model sanatoria for each million of population. It should organize national laboratories of human and animal pathology, and afford opportunities for scientific research. It would have medical control of all Indians on reservations; and, in addition to the present quarantine regulations, the inspection of immigrants at the port of emigration is recommended, as well as the dissemination in foreign lands of a knowledge of the medical immigration laws. Finally, the matter of the pollution of lakes and streams should be under its control.

With all this in view, we confidently hope that the establishment of a Federal Department of Public Health cannot be long delayed.

THE ANNUAL MEETINGS OF PROVINCIAL MEDICAL ASSOCIATIONS

WE have recently received a letter from Dr. Arthur Wilson, secretary of the Saskatchewan Medical Association, which suggests a few remarks upon the work of the provincial associations in general. The Saskatchewan Association held its annual meeting during the first week in September, and to judge from Dr. Wilson's letter it was most successful. Although it was held within three weeks of the annual meeting of the Canadian Medical Association at Edmonton, the attendance was creditably large. We are informed that seventy-five men registered, and that the quality of the papers read at the meeting was excellent. The Saskatchewan Association is endeavouring to publish all the papers read in one volume, together with copies of the resolutions passed during the meeting.

We feel that the success of the Canadian Medical Association depends, in a large measure, upon the success of the meetings of the respective provincial associations. And in this sense we venture to record certain suggestions of Dr. Wilson's tending to the improvement of the provincial meetings. He points out first of all that more money is needed. In Saskatchewan the members pay a fee of $2.00 to the provincial association. This was found insufficient, and he suggests that the Council of the College of Physicians and Surgeons of the province should make a definite grant to the provincial association sufficient to cover the expenses of publication. Dr. Wilson suggests further that the provincial associations should be active in organizing provincial leagues of health to fight tuberculosis and the venereal diseases. We might add that each provincial association should endeavour to form county and town medical societies, which should have a close connexion with the provincial association. This last was very emphatically brought forward by Dr. Mackid in his presidential address to the Canadian Medical Association at Edmonton, and we feel that work of this character should be the first care of the provincial associations. The work of organizing the profession throughout Canada has recently taken on definite shape, and it is clear that one of the chief functions of the Canadian Medical Association and of its organ, the JOURNAL of the Association, should be along these lines. We congratulate the Saskatchewan Medical Association upon its success at its recent meeting.

PUBLIC HEALTH IN ONTARIO

FOR a number of years the public health of Ontario has been in the care of an inspector and a sanitary inspector, while the provincial board of health consisted of seven members, of whom the secretary was the executive officer. Obviously, under such an arrangement, it has been impossible adequately to do the work included under such a far-reaching term as the "public health of Ontario." In Canada, questions relating to public health have long called in vain; now, at last, they are to receive their answer and the near future will bring many changes. To Ontario goes the honour of being the first in the field. Seven district officers of health have been appointed, and these men will give up all their energies and time to the sanitary work of their districts. The example set by Ontario has been closely followed by Quebec, but the officers for Quebec have not yet been appointed.

The measures embodied in the recent Public Health Act, which was passed by the Ontario government last session, came into force on August 8th last. The local organization of Ontario will remain much the same, but the number of members of the board will be reduced and the medical officer of health will be the executive officer. To prevent unnecessary changes and to increase the efficiency of the medical officer of health, the Act states that this officer shall not be dismissed save with the approval of the provincial board. The Act further provides for an annual conference of the medical officers of health, the first of which was held last month.

Two of the most important features of public health are the water supply and the disposal of sewage. Excellent laboratory facilities are provided at Toronto and at Queen's

University, Kingston; and these are to be supplemented by laboratories in connexion with the Hygienic Institute at London. During the past two years in the Toronto laboratories alone, one hundred and fifty cases of rabies have been treated, and, as the treatment was given at a minimum cost, not less than fifteen thousand dollars were saved to the people of the province. As the lakes and streams of Canada are the chief sources of water supply, it is imperative that measures should be taken without further delay to prevent the pollution of these waters. This question is dealt with at considerable length in the new Act. The care of ice supplies and the inspection of meat are other vital questions which receive attention under the new arrangements.

No great change has been made in the quarantine regulations; but, in future, all cases of measles are to be placarded, and the period of isolation in scarlet fever is to be extended from five to six weeks. Compulsory vaccination is to be enforced in any municipality in which small-pox is present. The health inspectors are authorized to board all trains, boats, etc., coming from infected areas, and passengers who are unable to prove that they have been duly vaccinated are to be vaccinated at once or sent back to the point of embarkation. All cases of communicable disease are to be reported by the householder or by the physician in charge of the case within twelve hours of diagnosis. The term "communicable disease" is clearly defined in the following words: "Communicable disease shall mean and include any contagious or infectious disease, and shall include small-pox, diphtheria, scarlet-fever, measles, German measles, glanders, cholera, erysipelas, tuberculosis, mumps, anthrax, bubonic plague, rabies, poliomyelitis, and cerebro-spinal meningitis." In the case of tuberculosis, weekly reports are to be submitted to the provincial health board. Maps are to be kept by all municipalities and the location of all cases of tuberculosis within their borders is to be marked on them. If considered necessary by the provincial board of health, or by the local officer of health, a patient may be removed to a hospital or sanitarium and required to remain there until it is considered advisable for him to return home. In the case of indigents, the expense shall be borne by the municipality; and should the patient have no place of abode, the municipality to which the medical officer belongs who sends him to the institution shall be responsible. In unorganized districts of the province, the provincial board will undertake this duty and the expenses will be paid from a fund to be voted for this purpose by the legislature. Patients suffering from tuberculosis shall notify the local authorities of any change of residence, and, if they remove to another locality, the medical officer of health shall be informed immediately. Printed instructions as to treatment will be forwarded to each patient by the provincial board of health as soon as the case has been reported. Provision has also been made for the disposal of the bodies of persons dying from contagious diseases. Any person who contravenes the provisions mentioned above incurs a penalty of from twenty-five to one hundred dollars.

To Nova Scotia belongs the credit of having been the first province in Canada to establish a sanitarium for the treatment of tuberculosis. Already much has been accomplished in the prevention and treatment of this disease; yet much remains to be done. The field is large and the disease creeps on relentlessly. The individual may do much to evade the dreaded foe, but he must first of all be instructed as to what he should do. At a recent meeting of the Nova Scotia Medical Association, a committee was appointed, consisting of Dr. J. B. Black, Dr. G. H. DeWitt, and Dr. Ross Faulkner. The members of this committee suggested to the government that a physician should be appointed whose duty it should be to examine all suspected cases of tuberculosis throughout the province; and that, to supplement the work of this physician, nurses should be appointed in each municipality, who would instruct those suffering from the disease in its incipient stage as to the most effective means of arresting the progress of the disease and preventing its spread amongst those with whom they come in contact. Thus, many patients will be given an opportunity of recovery who, otherwise, would not receive proper treatment until they were unable to fulfil their daily duties, and perhaps until the disease was so far advanced that little hope of recovery could be entertained. This suggestion is likely to bear fruit in the near future and there is little doubt that a physician who is an expert in the diagnosis and treatment of tuberculosis will soon be appointed and will be assisted by qualified nurses in the various municipalities.

At the March meeting of the Owen Sound Board of Health, Dr. H. G. Murray offered to inspect gratuitously for one year the children attending the public schools in that city. The offer was accepted by the board, and Dr. Murray begins his work of inspection this session. The need for the medical inspection of children is becoming more widely recognized, and a system of inspection is already in vogue in most of the large cities of the Dominion. Not only do the physical defects of the children demand this inspection, but the mental state of the child, also, frequently requires consideration. Children mentally deficient should be placed in a separate class, where they can be more carefully studied by the teacher, and where every assistance may be given them to overcome their deficiencies. The plan outlined by Dr. Murray is somewhat as follows: the teacher will report to the medical inspector any physical defects that may have been observed among the children under his supervision, and these children will be examined by Dr. Murray on his next visit to the school; each school will be visited once a week. Any child who is in need of treatment will receive a printed note addressed to the parent, explaining the nature of the defect and asking that the child be taken to the family physician for examination and treatment.

We have received enquiries as to the working of the recent Canada Medical Act. The Act provides for the formation of a Dominion Medical Council which will work out the details of its administration. Dr. Roddick informs us that the Hon. Dr. Roche, Secretary of State, who has the matter in hand, hopes to have everything in readiness to convene the Council towards the middle or end of October. Until then, no reliable information can be given regarding the scheme of Dominion medical registration.

The following figures, which are taken from the treasurer's report, are of interest as showing the development of the work done at the Vancouver General Hospital during the past nine years. In 1903 there were nineteen hundred and fifty-six hospital days; in 1911 this number had increased to one hundred and five thousand two hundred and thirty-four. Eight hundred and fifty-seven patients were treated in 1903, while in 1911 five thousand three hundred and fifty-one were treated. In 1903 the daily numbers were fifty-two; in 1911 they were two hundred and eighty-eight. In 1903 there were nineteen nurses and nine persons employed, in 1911 there were eight physicians, seventy-two nurses, and seventy-three persons employed. As to the financial equipment of the hospital during the last nine years, the board of directors have received $326,961 from the proceeds of by-laws, and they have expended $323,635; in addition, they have expended $33,991 on the nurses' home, $26,761 on the infectious hospital, and $36,023 in furnishing and equipment They have also expended $40,102 on capital account, thus making a total of $460,462 expended, or $133,501 in excess of the amount received. It is clear that during the nine years' activity of the board, and even with the most rigorous economy, the amounts received have been far from adequate to meet the expenses incurred in the work of the hospital.

Book Reviews

DISEASES OF THE EYE. A MANUAL FOR STUDENTS AND PRACTITIONERS. By J. HERBERT PARSONS, D.S.C., M.B., B.S., F.R.C.S. Second Edition. Toronto: The Macmillan Company of Canada, Limited, 1912.

Of the several excellent text-books on diseases of the eye specially designed for the student and general practitioner, none has appeared during the past few years more worthy of the highest possible commendation than Parsons' recent work. His position, as one of the world's recognized authorities upon the pathology of the eye, has ensured unusual interpretation of the subject-matter, which he treats at once in an intelligent and most interesting manner. He has, however, very wisely avoided sacrificing other features of the work to special pathology, which might possibly be beyond the average reader's appreciation; but after a brief pathological resumé of the subject, he discusses clinical features, therapeutic and operative treatment, throughout, in their natural sequence.

The book is quite up-to-date in the more recent methods of examination and in operative procedures, unusually well printed and admirably well illustrated. Certain drawings of the fundus oculi being especially worthy of notice. The work can most heartily be recommended to any one interested in the subject of ophthalmology.

AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS BY VARIOUS WRITERS. Edited by HERBERT FRENCH, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), assistant physician to Guy's Hospital. With sixteen coloured plates and over two hundred illustrations in the text. Price, $8.00. Toronto: The Macmillan Company of Canada, Limited, 1912.

This is a remarkable book, by reason of its eight hundred and fifty pages of seven hundred and fifty words each, and its general index of one hundred and sixty pages; but as it covers the entire ground of disease, that is, perhaps, not a cause for wonder. Its contributors are men of the first rank, and the subjects which we have read closely are thoroughly and adequately treated. The idea of the publication is to allow the main symptom of a disease to be quickly rehearsed; we venture to say that in a case of doubt the reader will have at once brought to his memory all the states of body in which that symptom appears; by a judicious use of the huge index, he is informed of diseases that he may have overlooked or forgotten. The differential diagnosis between these diseases is brought before him concisely.

The diagrams are excellent, the charts good, while the illustrations are all interesting, although not a marked feature of the book. The courage which faced so great a task is admirable, and we heartily commend the book as a very useful addition to every medical library.

INFANT FEEDING. By CLIFFORD G. GRULEE, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College, Attending Pediatrician to Cook County Hospital. Octavo of 295 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1912. Cloth $3.00 net. Sole Canadian Agents, The J. F. Hartz Co., Ltd., Toronto.

THE author states that his object in preparing this book was to present our knowledge of the scientific processes which underlie infant feeding, and the practical application of these principles, in such a way that they can be grasped by the practising physician. He has drawn largely upon the published works of Frankelstein, Czerny and Keller, Meyer and Freund; thus, the subject is presented from the German point of view entirely.

The fundamental principles of infants' nutrition occupies the first portion of the book. The special points in the anatomy and the physiology of the gastro-intestinal tract in the infant are discussed briefly and in a very interesting way. The bacteriology of the intestinal tract of the healthy infant follows, and the interesting point is noticed that the smear of a stool from a breast-fed baby is always Gram-positive, and that of an artificially fed baby Gram-negative, the reason probably being that in mother's milk the fermentative processes predominate and in cow's milk the putrefactive. This portion of the subject concludes with a chapter on the attributes of the normal child. He states that the gain in weight of a child should be six to eight ounces a week, during the first six months, while from the sixth to the twelfth month, the gain should not be more than two to three ounces. He gives it as his experience that the baby who is extremely fat at the end of the first year suffers from attacks of gastro-intestinal disturbance during the second year, and states that if we are to regard the weight curve of the breast-fed infant as the ideal standard by which to judge the artificially fed, we may be sure we will have but few normal artificially fed infants.

In Part II the author deals with the nourishment of the infant on the breast. Dealing first with the anatomy and physiology of the human breast, he then discusses the technique of nursing and the nutritional disturbances of the breast-fed infant. He strongly advocates a four-hour interval of nursing, or six nursings in the twenty-four hours.

Part III deals with artificial feeding, first discussing the foods used, giving in detail methods of preparation.

The next chapter, dealing with artificial feeding of the normal infant, is the most interesting in the book. The author does not follow the so-called percentage method, urging that it is largely responsible for the wholly fallacious idea that the protein is the source of gastro-intestinal disturbances in infancy, and also that the advocacy of such complicated mathematical formulæ as this method involves, has driven a large majority of physicians to the indiscriminate use of patented infant foods. It is impossible, he thinks, to lay down exact formulæ which will suffice in even a majority of infants.

Simple guiding rules are then given for the artificial feeding of infants with cow's milk and cereals. In the great majority of cases forty-five calories of food should be given to the pound weight in twenty-four hours, and this is the chief guiding rule given. The author believes in simple dilution of whole milk with the addition of carbohydrates, preferably in the form of malt-sugar and various starches. Up to the third month no starches are given.

Then follow chapters upon nutritional disturbances, the author following the well-known classification of Frankelstein in dealing with this portion of the subject.

Part VI, Nutrition in Other Conditions, concludes the book. In this section there are interesting chapters on the premature infant, the spasmophilic diathesis, the nervous infant, infant feeding in eczema, and congenital pyloric stenosis and pylorospasm. A comprehensive index is included.

The work is full of interest, the subject is clearly and simply presented, and while scientific in tone, the book will be found very useful by the practical physician.

The large print, and white unglazed paper and freedom from useless illustrations, show that the publishers have considered the reader's comfort.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

COLLECTED PAPERS BY THE STAFF OF ST. MARY'S HOSPITAL (MAYO CLINIC), 1911. Octavo of 603 pages, illustrated. Price, $5.50 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents, The J. F. Hartz Company, Ltd., Toronto.

THE LOCAL INCIDENCE OF CANCER. By CHARLES E. GREEN, F.R.S.E. Edinburgh and London: William Green & Sons, 1912. Price, 1s. 0d.

PELLAGRA. HISTORY, DISTRIBUTION, DIAGNOSIS, TREATMENT, ETIOLOGY. By STEWART R. ROBERTS, S.M., M.D. With eighty-nine special engravings and coloured frontispiece. Price, $2.50. St. Louis: C. V. Mosby Company, 1912.

THE TREATMENT OF INFANTILE PARALYSIS. By OSKAR VULPIUS, M.D. Translated by ALAN H. TODD, M.B., B.S., B.Sc. (Lond.); with introduction by J. JACKSON CLARKE, M.B. (Lond.), F.R.C.S. Illustrated with two hundred and forty-three figures. Price, 10s. 6d. net. London: Baillière, Tindall and Cox, 1912.

ELEMENTS OF PRACTICAL MEDICINE. By ALFRED H. CARTER, M.D., M.Sc. Tenth edition. Price 9s. net. London: H. K. Lewis, 1912.

THE CLINICAL PATHOLOGY OF SYPHILIS AND ITS VALUE FOR DIAGNOSIS AND CONTROLLING TREATMENT. By HUGH WANSEY BAYLY, M.A., M.R.C.S., L.R.C.P. Price 5s. net; one hundred and ninety-six pages, illustrated by three plates and twenty-two figures. London: Baillière, Tindall and Cox, 1912.

MOUTH HYGIENE AND MOUTH SEPSIS. By JOHN SAYRE MARSHALL, M.D., Sc.D. Philadelphia and London: J. B. Lippincott Company, 1912.

ARTERIOSCLEROSIS. ETIOLOGY, PATHOLOGY, DIAGNOSIS, PROGNOSIS, PROPHYLAXIS AND TREATMENT. With a special chapter on Blood Pressure. By LOUIS M. WARFIELD, A.B., M.D., with an introduction by W. S. THAYER, M.D. Illustrated with twenty-eight engravings. Second, revised edition. Price, $2.50. St. Louis: C. V. Mosby Company, 1912.

THE SURGICAL CLINICS OF JOHN B. MURPHY, M.D., at the Mercy HOSPITAL, CHICAGO. Vol. I, No. 2 and No. 4. Price: $8.00 a year; published bi-monthly. Philadelphia and London: W. B. Saunders Company, 1912.

HISTORY OF THE MEDICAL TEACHING IN TRINITY COLLEGE, DUBLIN, AND OF THE SCHOOL OF PHYSIC IN IRELAND. By T. PERCY C. KIRKPATRICK, M.D., M.R.I.A. Dublin: Hanna and Neale, 1912.

A TEXT-BOOK OF PATHOLOGY FOR STUDENTS OF MEDICINE. By J. GEORGE ADAMI, M.A., M.D., F.R.S., and JOHN MCCRAE, M.D., M.R.C.P. (Lond.). Illustrated with three hundred and four engravings and eleven coloured plates. Philadelphia and New York: Lea and Febiger, 1912.

THE PITUITARY BODY AND ITS DISORDERS. CLINICAL STATES PRODUCED BY DISORDERS OF THE HYPOPHYSIS CEREBRI. By HARVEY CUSHING, M.D. An amplification of the Harvey lecture for December, 1910; three hundred and nineteen illustrations. Philadelphia and London: J. B. Lippincott Company, 1912.

PHARMACOLOGY AND THERAPEUTICS FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By HORATIO C. WOOD, JR., M.D. Philadelphia and London: J. B. Lippincott Company, 1912.

INTERNATIONAL CLINICS. Vol. II, twenty-second series. Edited by HENRY W. CATTELL, A.M., M.D. Philadelphia and London: J. B. Lippincott Company, 1912.

Men and Books

By Sir William Osler

XIV. Kelly's American Medical Biography. What more delightful in literature than biography? And yet, how uncertain and treacherous is the account which any man can give of another's life! And who is to be trusted to give a correct account of his own? Montaigne is the only great autobiographer; the only man whose spirit and pen make us feel that we know as much of him as any one of us could tell of himself; the only man we believe when he says, "I have either told all, or designed to tell all. . . . I leave nothing to be desired or guessed at concerning me." However imperfectly told, the story of any life has an interest which appeals to us in direct proportion as we feel that brotherly sympathy with human effort, careless of the result, whether success or failure.

When my colleague, Howard Kelly, spoke of a scheme for a great work on American medical biography, I envied his extraordinary capacity for initiative and for work. Few men of his generation have known the profession of his own country so well, and with his gift for organization, and for getting good work out of others, I felt sure the plan would be successful. I remember that I urged him to take as a model the "Dictionary of National Biography," and to choose subjects of the first rank only, and to have their lives written by various authors. The result is two big volumes in which American and Canadian medical biography is brought up-to-date. The work is well done and will be of permanent value for reference. But much more than this—it is of immense importance to have a sympathetic record of the men who have borne the burden and the heat in making the profession of the New World what it is to-day. There are lives we could have spared, of men who had attained great local prominence, but who contributed little to the common stock; but, in apologizing, Dr. Kelly remarks that some of these have influenced their fellows by a strong personality. The best men are here, and with a few exceptions, the story of their lives is accurately told. With the Index Catalogue of the Surgeon General's Library so accessible, the bibliographies could in many cases have been omitted. It is nice to have biographies of the men who laid so well the foundation stones of Canadian medicine—Holmes, Widmer, Campbell, Howard, Almon, Rolph, and others.

The volumes are full of surprises. Conrad Gesner is one of my heroes—physician, naturalist, lexicographer—one of the most fascinating figures in the profession of the sixteenth century, and it is intensely interesting to find that Dr. Abraham Gesner, a pioneer geologist of Nova Scotia and the discoverer of kerosene, was one of his descendants.

Very often I have come across the name of Mettauer, a most voluminous contributor to the older American periodicals. The story of his career is very extraordinary, as he appears to have been an ante-bellum predecessor of the Mayo brothers, having a surgical clinic of remarkable extent for those days, and for a country district in Virginia.

There are excellent sketches of the physician-naturalists and botanists, a group so dear to Dr. Kelly's heart, and the biographies of Agassiz, Asa Gray, and Morton, were of special interest to me.

There are a good many grievous omissions—the Jacksons, James, James jr., and J. B. S.; Henry I. Bowditch, and Henry J. Biglow, Boston men of the very first rank; Dickson, of Charlestown, S.C., one of the strongest writers of the profession; LaRoche, William Pepper, senior, John Forsyth Meigs, the Rogers brothers of Philadelphia, and David Ramsay, the historian of the Revolution and of Washington—these should come in a second edition.

THE necessity for a sanitarium for the isolation and treatment of cases of tuberculosis has been felt for some years past by many residents of Berlin, Ontario. As a result of continued agitation, a by-law has been submitted at last, which, if carried, will provide fifteen thousand dollars towards the establishment of the much needed institution. A Tuberculosis Sanitarium Trust was formed recently, and to this trust will be given the management of the suggested sanitarium and the supervision of the building arrangements. The trust will be aided very materially in its work by the Ontario government, which will contribute one dollar for every five dollars spent by the trust, and, in addition, three dollars a week towards the cost of maintenance of patients paying less than five dollars a week.

Res Judicatæ

ON THE BALANCE OF THE BASES, SODIUM, POTASSIUM AND CALCIUM IN THE BODY. A REVIEW OF SOME RECENT PAPERS

SEVERAL years ago, 1896, Sir Almroth Wright called attention to the apparent effect of the administration of calcium salts in controlling the rashes subsequent to inoculation with typhoid vaccine, diphtheria antitoxin, etc., and, later, to their action in controlling exudative inflammation. He ascribed these results entirely to an increase in the coagulability of the blood brought about by the calcium. Subsequent work could by no means justify this hypothesis, and, partly in consequence of this defect, the treatment has never gained an assured place in therapeutics.

The work of Hans H. Meyer's pupils in Vienna, however, has given the matter a new and valuable trend. During the progress of a study of oxalate and iodide poisoning, certain results were noted that suggested the following experiments, carried out by two of his pupils, Chiari and Januschke.[1] If dogs are poisoned with large doses of iodides, very marked pleural effusions are caused, but if the poisoned animal be given repeated subsequent injections of calcium chloride, no pleural effusion occurs, though the animal shows the other characteristic signs of iodide poisoning. In the same way, dogs poisoned with thiosinamin can be protected from pleural effusions by injections of calcium salts. So, too, guinea-pigs poisoned with diphtheria toxin fail to show the characteristic pleural effusions if calcium salts be administered. Even more striking are the experiments upon the influence of calcium on the control of exudative inflammations of the mucous membranes. These experiments can be carried out under anæsthesia. If either oil of mustard or abrin be placed in the conjunctival sacs of rabbits, very marked œdematous inflammations occur, but if the animals are previously injected with calcium salts any inflammation which takes place is quite dry. The following experiment shows that Wright's explanation is not adequate. If hirudin, the active principle from leech heads, be injected in sufficient quantity into any animal, coagulation of the blood is prevented, even if the blood be shed. If, now, an injection of this extract be first given, an exudative inflammation can be set up, as is normally the case, and can be checked in characteristic fashion by calcium even though the latter has produced no effect on the coagulability of the blood. Evidently the explanation of this phenomenon must be sought for elsewhere.

The work of numerous observers during the past few years has shown that the salts of calcium and of magnesium have marked effects in producing precipitation of proteins and other colloidal cell constituents. Miculicich showed that calcium salts delayed the laking of red-blood cells by such bodies as urethane, and Henderson called attention to observations by Fuhner which showed in part what the steps in such a reaction might be. If frogs' muscles be placed in very weak solutions of guanidin, they show in a few minutes very characteristic twitchings; these may be brought to rest or prevented from appearing if a certain proportion of calcium is present in the mixture. Now if muscles which have been in a calcium-guanidin solution and have shown no twitchings are removed and placed in a saline free from guanidin and calcium, the twitchings at once appear. Evidently, in this case, the guanidin has gained entrance but has been unable, in the presence of the calcium, to carry out its typical effect. Jacques Loeb has also shown that the rhythmic twitchings brought on by the immersion of muscles in solutions of sodium and potassium salts can be prevented or dissipated by the addition of calcium.

It remained for Herbst[8] to show that the cement substance between many body cells widens and becomes looser when deprived of calcium, and becomes more compact and firmer by an addition of the same. It seems that the correct explanation of the absence of effusion in the cases mentioned above is to be found in some such action on the capillary wall, thus preventing the exit of plasma into the tissue spaces.

Meyer then remembered a remark made by Cushny, to the effect that the usual saline purgatives were in all cases precipitants of calcium. This led Chiari[2] to study the calcium content of the intestinal wall and of its secretion during the action of various purgatives. Under anæsthesia he ligated a loop of intestine and inserted into its lumen a solution of one of the purgative salts, sodium sulphate for example. He then replaced the loop in the abdomen and waited an hour; at the end of this time he found the content of the loop increased somewhat and that the fluid contents contained a very considerable amount of calcium. The wall of the loop was also richer in calcium than that of other parts. He assumed that the action of the purgative had led to the precipitation of the calcium within the wall, thus rendering it physiologically inert; some of the inert calcium had been excreted, but much more had lain in the wall and been added to by additional calcium taken up by the blood to replace that thrown out of physiological use. When similar experiments were made with mannite, a sugar, no such changes in calcium were detected. Calomel is a purgative. Mercury poisoning leads to osteoporosis and to calcium deposits in the kidney. Chiari then studied its action in a similar fashion. He found that the contents of the loop were indeed rich in calcium, but that the intestinal wall throughout, including the loop, was poor in calcium. In all probability the mercury absorbed had led to a diffuse action throughout the intestine. It may be recalled in this connexion that the action of mercury as a diuretic agent is due to its causing a hydræmia secondary to a marked increase in peristalsis in the small intestine, together with a decrease in absorption and an increase in secretion, thus leading to a large amount of water passing rapidly into the large intestine and a rapid absorption from there (Fleckseder[7]). According to Chiari, the marked peristalsis following the exhibition of pilocarpin or physostigmin is also accompanied by a decrease in the calcium content of the intestinal wall. The experiment of Mathews and Brown, showing that the peristaltic action of physostigmin may be counteracted by calcium, is well known. It may also be recalled that in cases of intestinal catarrh there is a marked increase in the intestinal excretion of calcium (Fr. Müller, Solomon and Wallace). These experiments must not be considered as furnishing the whole explanation of the action of purgatives, but the variations in calcium content are, no doubt, either necessary accompaniments or form one of the important factors. In the case of saline purges it is clear,—from the fact that such substances as mannite, which have no effect upon the calcium content of the wall, yet exert a laxative action when they are placed in the intestine and become dissolved in a mass of water,—that the mass of water alone distending the wall would set up the increased peristalsis mechanically.

The influence that such alkaloids as physostigmin seemed to exert upon the calcium content of organs naturally gave rise to the question as to whether the calcium content had any effect on the action of stimulation of nerves. Chiari and Fröhlich[3-4] were soon able to show that animals poisoned with oxalate, which withdraws calcium from the body, showed an increase in irritability to such chemical stimuli as adrenalin, pilocarpin, and atropin, in so far as certain nerve-endings were concerned. Less adrenalin was needed in cats thus poisoned than in normal cats to bring about a rise in blood-pressure. In some cases, injections of calcium chloride were able to restore the endings so rapidly that its effect could be detected within a few minutes. This was by no means always the case.

At this point a Viennese dermatologist, Luithlen,[5] became interested in the problem and came to the laboratory to carry on some experiments. He very quickly found that while in normal dogs a moist eczema could not be produced experimentally, this was readily achieved in dogs previously poisoned with oxalate. He also found that animals to whom considerable doses of hydrochloric acid had been given manifested the same increase in skin irritability, but that this could not be relieved by injections of calcium, so that decrease in calcium content did not seem to furnish the sole explanation of the increase in irritability. Other observers had previously shown that any acidosis, such as that produced by feeding acid or occurring during disease (diabetes), was accompanied by disturbances in the excretion of the bases, sodium, potassium, etc., (Walther, Dunlop, and others).

Luithlen[6] therefore undertook a more extensive study. By feeding animals (rabbits) on a fixed diet and estimating their total intake and output of sodium, potassium, calcium, and magnesium, he was able to show that the effect of an artificial acidosis produced by feeding hydrochloric acid was a marked loss in all these bases, but especially in sodium and potassium. The body seemed to hold on to the calcium and magnesium more greedily. As a result of the acidosis, there occurred a gradual demineralization of the body.

Luithlen's further experiments showed that when a rabbit was fed on a diet of green food alone, there was an increased retention of calcium, magnesium, and potassium, but a loss of sodium—more was excreted than fed. On the whole, there was, however, an increased retention of base, an increased mineralization of the body. Animals fed on green food alone very soon sicken and die. When fed on oats an equilibrium was quickly reached between the total base fed, no matter how great, and the amount excreted, but the body lost in calcium and potassium and gained in sodium and magnesium. Animals fed for a long time on oats show, however, no signs of ill health, and ere long a complete balance must be struck in the case of the other bases also. Luithlen's observations extend and confirm those of Goiten, Kochmann, Martin, and Petsch, who showed that when animals were fed on a diet poor in calcium they lost calcium up to a certain point. When a rabbit is fed on green food he receives some four times as much of the above bases as when fed on oats, and some fourteen times as much calcium.

Luithlen was also able to show that in animals suffering from acidosis there was a definite loss of calcium from the skin, and, indeed, as was to be expected, the change in basic content of the skin exactly corresponded with that described above for the general metabolism of the body as a whole. Since the early work of Loeb and Overton, and especially since Ringer's experiments with the perfused heart, physiologists and pharmacologists have realized clearly that, for the maintenance of the best working efficiency of the body, there must be a certain balance between the various salt bases, and that life, indeed, was impossible if this balance were departed from to any marked extent. The extent and intricacy of this law, however, has never previously been put so clearly before us.

It is difficult to make clinical deductions from the work presented above. It seems of vital importance that we should have more detailed information about the effect of diabetic and other acidoses on the basic equilibrium of the human body, and if we may provisionally assume—as from the partial studies now existing it seems we have every right to do—that the course of a diabetic acidosis follows the course of an experimental one produced by the administration of hydrochloric acid, it is obvious that not one base alone—in the form of carbonate or acetate—must be offered to the body to neutralize its acids, but a mixture of all the bases, so that the body may select. In this connexion the occurrence of eczema in a case of diabetes may form a most useful warning of danger. The suggestion is obvious, of course, that in cases of moist eczema and other exudative inflammations, this feature at all events of the disease may be controlled by the administration of calcium directly or by a change to a calcium-rich diet.

References:—

1. Chiari and Januschke, *Arch. f. exp. Path. u. Pharm.*, 65, 1911, p. 121.
2. Chiari, *ibid.* 63, 1910, p. 434.
3. Chiari and Fröhlich, *ibid.* 64, 1911, p. 214.
4. Chiari and Fröhlich, *ibid.* 66, 1911, p. 410.
5. Luithlen, *ibid.* 68, 1912, p. 209.
6. Luithlen, *Wien. Klin. Woch.*, 25, 1912, No. 18.
7. Fleckseder, *Arch. f. exp. Path. u. Pharm.*, 67, 1912, *p.* 407.
8. Herbst, *Arch. f. Entwicklungmech.*, 9, p. 429.

Toronto. V. E. Henderson.

Retrospect of Obstetrics

LE LORIER—"PERCHLORIDE OF IRON TEST IN HYPEREMESIS GRAVIDARUM." "L'URODIAGNOSTIQUE ET L'UROPROGNOSTIQUE DES VOMISSEMENTS GRAVES DE LA GROSSESSE PAR LE PERCHLORIDE DE FER." *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris*, April, 1912.

LE LORIER, in March, 1912, in a paper read before the Société de Biologie, states that he, aware of the relationship of acetonuria and fasting, was led to search for acetone and acetone bodies in the urine of women suffering from pernicious vomiting of pregnancy. Contrary to what he expected, he found that the presence of acetone was inconstant.

In testing these urines by means of a solution of perchloride of iron, he noted that in each case he obtained the port wine colouration, which Gerhardt reports is constant in the urine of diabetics in whom coma is imminent.

Le Lorier found the reaction constant in the urine of four cases of pernicious vomiting of pregnancy, which he had encountered in the course of three years.

He considers that at present there is not sufficient importance attached to the significance of the presence of acetone and acetone bodies in the urine of cases of pernicious vomiting of pregnancy. Fieux and Dantin in reporting a case of pernicious vomiting treated recently by injections of serum, note the presence of an unusually large amount of acetone bodies, and of beta-oxybutyric acid in particular, in the urine examined. This, Le Lorier mentions, supports his findings.

The author considers that the intensity of the colour reaction obtained by the chloride of iron test is proportional to the gravity of intoxication of the patient. Thus he considers the test is certain and easy of application.

With regard to the character of the reaction obtained on the addition of a solution of perchloride of iron to the urine in these cases, he states that it is neither the acetone bodies nor beta-oxybutyric acid which gives rise to the deep port wine colour, but, in all probability, it is due to the presence of acetyl-acetic acid.

Le Lorier has failed to obtain this reaction on testing the urine of normal cases of pregnancy, or in the urine of cases of pregnancy complicated by pathological conditions other than pernicious vomiting. No reference is made to his having tested the urine of cases of eclampsia.

In one instance he obtained a feeble colouration in a case during labour. In another instance he failed to obtain the colouration in the urine of a patient who had, for three weeks, been on a water diet on account of appendicitis, therefore he concludes that fasting fails to produce it.

Le Lorier concludes that, as the perchloride test shows that acidosis is intense in pernicious vomiting of pregnancy, alkaline solutions should be injected into the veins, and suggests a solution of eight per cent. sodium carbonate for this purpose.

The author considers that in this reaction we have a practical and simple means of ascertaining the gravity of the condition present, and thus a method that may be of assistance in enabling a decision to be reached that the induction of abortion is necessary.

Pernicious Vomiting of Pregnancy and the Serum of Women in the Early Months of Gestation.

Fieux et Dantin—(1) " Vomissements graves de la grossesse et sérum de femme enceinte des premiers mois." *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris.* No. 1, January, 1912. (2) Contribution à l'emploi du sérum de femme enceinte normale des premiers mois dans la thérapeutique des vomissements graves de la grossesse. *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris.* No. 4, April, 1912.

The authors, having been deeply interested in a publication of Mayer and Linser, of Tubingen, relating to the rapid cure of a pregnancy dermatosis following injections of blood serum from a normal case of pregnancy, determined to apply the same treatment in a case of pernicious vomiting of pregnancy.

The case which first was subjected to the treatment was in a desperate condition, but before inducing abortion, which was considered necessary, the patient was given an injection of 12 c.c. of serum obtained from a healthy woman who was eight and a half months pregnant. No improvement was obtained, and accordingly the uterus was emptied and the patient recovered.

Le Lorier, in July, 1911, reported a case of pernicious vomiting treated by injections of blood serum obtained from a pregnant woman in normal condition, who was approaching term, in which rapid and satisfactory results were obtained.

Encouraged by the results obtained by Le Lorier, the authors determined on the next occasion to employ serum from a healthy woman at the second or third month of pregnancy, believing that at this period the humoral reactions should be more intense, and consequently the serum vaccine more active. Accordingly, in this communication they give a detailed report of a case which they submitted to this treatment with excellent results.

The patient was in the fourth month of her third pregnancy, and was suffering from severe vomiting, which had persisted for some weeks in spite of ordinary treatment. Her urine was found to contain urobilin and a large quantity of acetone bodies. After several days of hospital treatment, without much improvement, a large quantity of beta-oxybutyric acid was found in her urine. A hypodermic injection of 10 c.c. of serum, obtained from the blood of a healthy woman a few moments after she had aborted in the third month, was followed by marked, but somewhat temporary, improvement. As the amelioration in the patient's condition was not progressive, a second injection of 12 c.c. of serum from a healthy woman in the third month of her pregnancy was given. This was followed by a very rapid improvement in the patient's condition, the vomiting disappeared, the quantity of urine excreted increased, its character improved, and the recovery was prompt and satisfactory. Following the first injection of serum no other treatment was attempted, and the patient was permitted to partake of whatever food she desired.

In a later communication, as above, the authors report a second case. The patient, aged twenty-four years, was free from any neuropathic history. Her first pregnancy had to be terminated by abortion on account of incoercible vomiting. Her second pregnancy went to term and she was delivered of a healthy child.

Within a month of the onset of her third pregnancy, vomiting began and rapidly increased in severity till all the symptoms of severe toxæmia manifested themselves. An injection of 10 c.c. of normal human serum failed to control the vomiting, but a transitory slowing of the pulse rate, lasting four days, was apparent. Subsequently the pulse rate rose to from 104 to 112 per minute.

An injection of 12 c.c. of serum from a healthy woman in the third month of pregnancy was followed by twenty-four hours of severe bilious vomiting, though the pulse rate slowed down to less than 100 per minute. The next day improvement set in and several days later cure was complete.

Retrospect of Surgery

Diverticula of the Gastro-intestinal Tract: Their Surgical Importance. By Charles H. Mayo, *Journal of the American Medical Association*, July 27th, 1912, p. 260.

In this interesting communication the author deals with diverticula, congenital and acquired, met with throughout the gastro-intestinal tract, those of the œsophagus and of the large bowel forming the two most important groups. Of the former, thirteen cases are reported from the clinic at St. Mary's Hospital. Ten of them were operated upon and cured. The diagnosis of œsophageal diverticula has been rendered comparatively easy, both as to location and extent, by radiography following the ingestion of a suspension of bismuth and by the Plummer test. The latter consists in having the patient swallow a few yards of silk twist. When sufficient of this thread has passed through the stomach and into the intestine to stand traction, the outer end, which has been retained, is passed through a perforated œsophageal bulb-pointed probe, which is passed down into the diverticulum with the thread held loosely. The thread is then tightened, and the probe is elevated from the bottom of the œsophageal pouch to the level of the true œsophageal opening, and then pushed down into the stomach, thus measuring the depth of the diverticulum.

On the posterior wall of the œsophagus, about the level of the cricoid cartilage, there is found a weak space where the mucosa may be pushed out from within, and once the sacculation is formed, the tendency is for it to increase in size. Eventually the sac becomes a prolongation of the proximal gullet, while the opening of the lower œsophagus is found on the anterior wall of the sac.

When the sac is small, extirpation at one operation effects a cure. Operation in two stages is preferred for large sacs extending into the mediastinum. Invagination of the sac into the œsophagus is not recommended.

In the second important group, twenty-seven cases have been observed in the same clinic, the series including two cases of diverticulitis of the rectum and one of the anal ring. The latter is, possibly, the cause of certain cases of perirectal abscess which open near the anus on the skin and fail to become cured after repeated operations, owing to the preservation of the mucous lining through the high internal opening of the fistula.

Diverticula in the large bowel, in many cases, originate at the site of vessels passing into the bowel on the mesentery or at the site of the epiploic tags, and a congenital local defect with pressure in early life probably has considerable influence on their development. The circular muscle fibres give way first; later, the longitudinal. The symptoms are due chiefly to a peridiverticulitis which leads to the development of a mass of tissue at the site of the diverticulum. The condition is to be differentiated from tuberculosis, cancer, syphilis, and left-sided appendicitis. In a majority of cases the condition is considered malignant. In seven out of the twenty-seven cases, cancer was found grafted on the original lesion.

The treatment consists in removing the tumour mass with the reëstablishment of the intestinal tract. Anastomosis of the small bowel into the large is probably the safest procedure, or the operation may be made in a two-stage Mikulicz method. Bloodgood's method of side-to-side, ends-together anastomosis, with the ends of the stump brought into the incision beneath the skin as a safety valve to be opened if desired, is recommended. The mortality from operation approximates ten per cent.

THE corner-stone of the new wing of the Victoria Jubilee Hospital at Revelstoke, British Columbia, was laid on Wednesday, August 21st, by the Hon. Thomas Taylor, minister of public works. The hospital was first established in 1901, the corner-stone being laid by Lady Minto; and four thousand dollars towards its cost was then contributed by the government. Last year a new fire-proof wing was added, and the fact that it is now necessary to build an additional wing is striking evidence of the work that is being accomplished by the hospital. The new wing, it is estimated, will cost about one hundred thousand dollars, and one half of this amount will be contributed by the province. The need for enlargement is easily understood when one remembers hat the hospital receives patients from a radius of over one hundred miles, and that within this area are numerous lumber mills and railway construction camps, from which the employees are regularly treated at the hospital. The new wing is to consist of three storeys and will provide thirty-three additional beds, as well as operating rooms and demonstration rooms.

Obituary

Dr. James P. McInerney, of St. John, N.B., died August 8th. Dr. McInerney was the son of the Hon. Owen McInerney and was born at Rexton, Kent, in 1859. He graduated from McGill in 1884 and soon afterwards went to St. John, where he entered upon his professional career. Dr. McInerney was an able and successful physician and a keen politician, and, in 1908, became a member of the Legislative Assembly. Dr. McInerney leaves a widow and seven children.

Dr. J. O. Poitras, of Ste. Cunegonde, Quebec, died September 3rd, in the forty-eighth year of his age. Dr. Poitras was a graduate of Victoria College, Toronto, and for the past ten years had practised in Ste. Cunegonde, where he was well known and where he had endeared himself to all, but perhaps more especially to the poorer classes, among whom much of his work was done. Dr. Poitras leaves three daughters and two sons.

News

Dr. Hugh McCallum, of London, Ontario, was elected president of the Canadian Medical Association for the forthcoming year, at the Edmonton meeting.

Dr. Small and Dr. Powell, of Ottawa, have been elected to represent the Canadian Medical Association on the board of the Victorian Order of Nurses.

The Wellesley Hospital at Toronto was formally opened by H.R.H. the Duke of Connaught, August 27th.

Several cases of small-pox have been reported from Montreal. In one instance, three members of one family were found to be suffering from the disease, two other members having recently recovered. None of these cases had been reported to the medical officer of health by the physician in charge of the case.

It is probable that a faculty of medicine will not be established in the British Columbia Provincial University for several years.

At a meeting which took place August 8th, it was decided that the North Vancouver Hospital should be maintained temporarily by the district council.

The corner-stone of St. Paul's Hospital at New Westminster, British Columbia, was laid by Archbishop McNab, August 15th.

A by-law has been submitted to the ratepayers of Kindersley, Saskatchewan, to provide one thousand dollars for the building and furnishing of a hospital.

Dr. Joseph Isabelle has been appointed medical officer of health for Hull, Quebec, at a salary of five hundred dollars a year.

Some alterations are being made to the east wing of the Victoria Hospital at London, Ontario.

Several cases of infantile paralysis have occurred at Niagara Falls. Dr. J. A. Amyot and Dr. McClennan, of Toronto, are investigating the outbreak.

The formal opening of the new municipal hospital which has been established at Macleod, Alberta, took place August 14th.

Free vaccination against typhoid is now being conducted at the Moose Jaw General Hospital. During July only four cases of typhoid fever were reported; eleven cases of scarlet fever, two of diphtheria, and one of measles also occurred.

A new wing is to be added to the Prince Rupert Hospital.

The old school at Stettler, Alberta, is to be used as a hospital. The Beulah Mission building, which has served the purpose for some time, is too small to meet the increasing demand for accommodation.

The hospital at Humboldt, Saskatchewan, is almost completed. It has cost about thirty thousand dollars.

The British Columbia Hospital at South Vancouver, which was opened at the beginning of the year, is to be enlarged. The addition will provide accommodation for fifty patients.

An outbreak of small-pox is reported from Hamilton. The type of disease is mild and, so far, only a few cases have occurred.

The tuberculosis hospital at Kingston is to be formally opened October 15th.

The new Grey Nuns' Hospital at Regina is now ready for occupation. Whereas the old building could only receive twenty-six patients, the new hospital provides accommodation for eighty.

The Nova Scotia, New Brunswick, and British Columbia Medical Associations have been affiliated with the Canadian Medical Association.

At a meeting of the Montreal city council on August 19th, it was resolved that the board of commissioners be requested to have the more important clauses of the health laws printed in Greek, Hebrew, Italian, French, and English, and that copies of these clauses in the various languages be distributed gratuitously. If this is done, the foreign element of Montreal will be able to understand more perfectly the sanitary laws of the city and will no longer be able to plead ignorance.

The question of providing better protection from fire at the public hospital, St. John, N.B., is under consideration. It is suggested that iron balconies should be erected around each ward, and that a window in each of the wards should be cut down to the level of the floor in order to allow patients to be wheeled out on chairs. Such balconies would serve a double purpose, as patients could be wheeled on to them to get the benefit of the fresh air.

The Vancouver Isolation Hospital is almost completed. The hospital is to consist of three buildings—the main building, which is one hundred and ten feet long and thirty-nine feet wide, is placed in the centre; the men's building is on the left of the main building, while the building on the right contains the women's wards. Behind the main building is a level green sward where tents may be pitched, if found necessary, in case of a severe epidemic. Two other smaller buildings are also provided, one for men and one for women, where suspected cases may be kept under observation. The hospital grounds extend over twelve acres, and it is proposed to raise all the vegetables and farm produce for the hospital within its own grounds, and to employ convalescent patients in the gardens.

An arrangement whereby patients may see their friends and still avoid all danger of infection, has been planned. A large plate glass window has been placed in the lodge of the hospital, through this window patients may be seen by their friends, and a short distance telephone is to be installed so that a conversation may be carried on with the person on the other side of the glass. In this way the feeling that one is completely cut off from the world will be lessened, and the friends of the patient will have the satisfaction of both seeing him and speaking to him.

DURING the month of June six hundred and sixty-seven patients received treatment at the Vancouver General Hospital.

IT is probable that the Sisters of Providence will build a hospital at Lachine, Quebec. However, no definite plans have been made as yet.

DR. BRUCE has given up his position as medical superintendent of the Byron Sanitarium for Consumptives and intends to return to England to take charge of a sanitarium near London.

MONTREAL has been divided into nineteen districts, each of which is in charge of a physician whose duty it is to examine the children attending school in that district. Each child is to be carefully examined, as to its physical condition, at least twice before the schools close for the Christmas vacation.

SEVERAL cases of small-pox have occurred at Les Eboulements, Quebec.

THE plans have been prepared and the excavation work has been begun for the new hospital buildings at Saskatoon. Four buildings are to be erected,—the general hospital, the nurses' home, the service building, and the contagious hospital.

At the recent meeting of the Saskatchewan Medical Association, Dr. Seymour, commissioner of public health at Regina, stated that the Dominion government had granted the sum of sixty thousand dollars for the work on tuberculosis in the province of Saskatchewan, on the condition that the people of that province subscribed fifteen thousand dollars for the same purpose.

Dr. R. T. Rutherford, of Strathclair, Manitoba, has been appointed medical inspector of immigrants coming to Canada by way of New York.

The daily bacteriological examination of tap water, together with adequate filtration and chlorination, has resulted in a decrease of typhoid fever in Toronto this year. The following are the figures for July and August in 1911 and 1912.

	July.	August.	July.	August.
Number of cases.........	35	90	20	47
Number of deaths.......	3	14	1	5

A considerable percentage of the 1912 cases have been found to have had their origin in points outside the city.

Dr. Hodgetts, the medical adviser to the Dominion Conservation Commission, has been temporarily appointed as medical officer of health for Ottawa until Dr. Shirreff is able to resume his duties.

The new hospital at Smith's Falls, Ontario, is almost completed and will be opened very shortly.

The construction of the St. Paul's Hospital at Vancouver is progressing rapidly. The estimated cost of the building, when completed, is about four hundred thousand dollars. The hospital will be provided with a splendid roof garden and will give accommodation for one hundred and fifty patients in addition to the fever wards. In designing the building, provision has been made for enlargement, should additional accommodation be required.

It is proposed to reorganize the municipal department of public health of Regina, and Dr. M. B. Bow, the medical officer of health, has prepared a report for consideration by the board. It is suggested that the department be divided into the following branches, each of which shall have an inspector: dairies; foods, fruits, etc.;

property and plumbing; nuisances, infectious and contagious diseases; and scavenging.

THE sum of fifteen thousand dollars has been granted by the city to the Vancouver General Hopsital in order that the outstanding debts incurred by the hospital may be paid.

IT is intended to erect a hospital at Port Alberni, British Columbia. The name of the hospital is to be the West Coast General Hospital.

A MATERNITY hospital has recently been opened at High River, Alberta.

AT a meeting of the Strathroy town council on September 3rd, the sum of five hundred dollars was granted to the hospital in compliance with the request of the hospital board.

DR. C. M. STAFFORD has been appointed as bacteriologist and superintendent of the laboratory department of the Saskatoon Board of Health. Dr. Stafford, who is a Canadian, is a graduate of the Detroit College of Medicine, and has practised in Detroit for some years. He has recently been engaged in research work in the biological department of the Parke, Davis Company.

THE new health act requires that the board of health of each town shall consist of the mayor, the medical officer of health, and one resident, who shall be appointed by the town council; that the board shall meet quarterly; and that weekly reports as to the existing health conditions shall be submitted to the provincial board of health.

A SLIGHT epidemic of typhoid fever has been reported from Bradford, Ontario.

AN open-air school has been inaugurated in Toronto. It is hoped that, by next spring, arrangements will have been made for a permanent system of open-air school work on a fairly large scale.

ARRANGEMENTS are being made to extend the Chipman Memorial Hospital at St. Stephen, New Brunswick.

Dr. A. C. Campbell, of St. Thomas, has been elected president of the St. Thomas and Elgin Medical Society for the forthcoming year. Dr. Perry O. King, of St. Thomas, is the secretary.

The third annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held at Cleveland, Ohio, from October 2nd to October 5th.

It is probable that a municipal hospital will be established at Yorkton, Saskatchewan. The question is now under consideration by the town council.

Dr. Frederick Adams has been appointed as epidemiologist for Toronto. Dr. Adams is a graduate of Toronto and for some time past has been assisting Dr. Nasmith, of the Toronto Board of Health.

INTERNATIONAL CONGRESS OF MEDICINE, LONDON, 1913

Preparations for the seventeenth International Congress of Medicine, which is to be held next year in London, England, are going forward rapidly. A circular has recently been issued by the honorary secretary, requesting that all those intending to present papers at the congress should notify him by February 28th, 1913, giving at the same time a short abstract of their paper. In this way a synopsis of the papers to be read will be prepared by official "reporters," and these will be translated into the various languages and published in the medical journals before the congress meets. Those taking part in the congress will thus come well prepared to participate in the discussions. We would urge upon Canadians the necessity of doing their fair share to make the congress a success.

It is with pleasure we announce that Dr. T. G. Roddick, of Montreal, emeritus professor of surgery, McGill University, has been appointed a vice-president of the congress.

The Canadian national committee, as at present constituted, is as follows: W. H. B. Aikins, Toronto; A. McPhedran, Toronto; G. E. Armstrong, Montreal; T. G. Roddick, Montreal; H. A. McCallum, London; H. G. McKid, Calgary; Jasper Halpenny, Winnipeg; C. K. Clarke, dean of the medical faculty, University of Toronto; J. C. Connell, dean of the medical faculty, Queen's University; H. H. Chown, dean of the medical faculty, Manitoba University; E. P. Lachapelle, dean of the medical faculty, Laval

University; F. J. Shepherd, dean of the medical faculty, McGill University; and representatives of the Canadian medical press: Geo. Elliott, *Dominion Medical Monthly;* John Ferguson, *Canada Lancet;* George O. Hughes, *Western Canada Medical Journal;* A. Macphail, CANADIAN MEDICAL ASSOCIATION JOURNAL; Harry Morell, *Western Medical News;* Adam H. Wright, *Canadian Practitioner and Review;* W. A. Young, *Canadian Journal of Medicine and Surgery.*

The honorary general secretary is Dr. W. P. Herringham, and any communications in regard to the reading of papers should be addressed to him at the central office of the congress, 13 Hinde Street, London W., England.

Canadian Literature

ORIGINAL COMMUNICATIONS

Dominion Medical Monthly, September, 1912:

On the mononuclear cells of the blood	O. C. Gruner.
A medical sermon—De Rebus	J. S. Sprague.
Method of the study of direct or specific drug action	Finley Ellingwood.
Congenital absence of the femur: Report of five cases	B. E. McKenzie.

The Canadian Journal of Medicine and Surgery, September, 1912:

Symptoms and diagnosis of extra-uterine pregnancy	A. Belcham Keyes.
Ætiology and pathology of exophthalmic goitre	W. T. Connell.
Lactation and breast-feeding	G. S. Strathy.

The Public Health Journal, August, 1912:

The medical inspection of immigrants	C. A. Bailey.
Rehousing in Canada	W. D. Lighthall.
The influence of dosage on the reaction to the tubercle bacillus	R. J. Ewart.
False starts in municipal sanitation	A. C. D. Blanchard.

The statistics of housing and co-partnership schemes . . . . . . Percy E. Nobbs.
Psychrophylic organisms in water . . . Joseph Race.

The Western Medical News, June, 1912:

Urine in its pathological relation to acute febrile disease . . . . . . R. S. Klein.
The indications for and technique of abdominal Cæsarean section and analysis of one hundred cases . . . Ross McPherson.

The Western Medical News, July, 1912:

Some notes on the organization and working of a cavalry field ambulance . . . F. L. Vaux.
Simple method of gastric analysis . . Robert A. Rose.

Le Montréal Médical, July, 1912:

Statistique du cancer . . . . . J. Bertillon.
La tuberculose et le lait . . . . L. Panisset.
Les hémorrhoïdes et leur traitement chirurgical . . . . Professor Quenu.
Scorbut infantile du début . . . Professor Broca.
L'ectopie du testicule . . . Professor Kirmisson.

Le Montréal Médical, August, 1912:

Néphrite urémigène . . . . Dr. Castaigne.
Etat actuel de la vaccinothérapie . . . A. Maute.
Considération scientifique et philosophique à propos de la délimination clinique du tabes . . . . N. F.

L'Union Médicale du Canada, August, 1912:

L'obstruction des voies biliaires . . . A. Marien.

Le Journal de Médecine et de Chirurgie, August, 1912:

Méningite séreuse, œdème papillaire, et polynévrite multiple des nerfs craniens chez un jeune fumeur alcoolique . . . J. N. Roy.
Balle de revolver au chiasma . . . J. N. Roy.

The Canadian Practitioner and Review, August, 1912:

Hyperthyroidism—its treatment . . W. J. Macdonald.

Medical Societies

BRITISH COLUMBIA MEDICAL ASSOCIATION

THE thirteenth annual meeting of the British Columbia Medical Association was held in Victoria, August 20th and 21st.

Among the visitors present were: Drs. J. W. Good and J. Halpenny, of Winnipeg; Dr. H. Meek, of London, Ontario; Dr. Musgrove, of Washington; Dr. Schwalm, of Rivers, Manitoba.

A very interesting programme was presented as follows:

GENERAL MEETING—Tuesday, 10 a.m.

1. Registration of members; 2. Reading of minutes; 3. Introduction of visitors; 4. Reports of committees; 5. General business.

Tuesday, 10.30 a.m.

1. "The early recognition of gastric carcinoma," Dr. J. A. McArthur, Victoria. Discussion opened by Dr. O. M. Jones, Victoria.

2. "Some abdominal conditions simulating recurring attacks of appendicitis," Dr. H. E. Ridgewood, Victoria. Discussion opened by Dr. Fraser, Victoria.

3. "The solid carbon dioxide treatment of nævus," Dr. E. A. Smith, Vancouver. Abstract—Impressions gathered from the treatment of fifty cases of nævus, mostly in young children, with solid carbon dioxide. Demonstration of instruments employed. Discussion opened by Dr. H. C. Lindsay, Vancouver.

4. "Some unusual types of abnormal development of the pelvic organs," Dr. Ernest Hall, Victoria, British Columbia. Abstract—(1) Septate uterus; (2) Pseudo-hermaphroditism, treatment of; (3) Double uterus, treatment of. Discussion opened by Dr. Dallas Perry, Vancouver.

5. "Diagnosis of smallpox," Fleet Surgeon W. E. Home, Victoria. Discussion opened by Dr. F. T. Underhill, Vancouver.

Tuesday, 2.30 p.m.

1. "Can we lessen the failures of vaccine treatment?" Dr. C. S. McKee, Vancouver. Discussion.

2. "The value of bismuth in the diagnosis of surgical diseases of the abdomen," Dr. H. W. Riggs, Vancouver. Abstract—(1) (*a*) Stomach, normal form and position; (*b*) Anatomical changes and mortality changes; (*c*) Diagnosis of ulcer and cancer; (2) Duodenum, ulcer and stricture; (3) Intestines, adhesions and growths. Discussion opened by Dr. H. R. Nelson, Victoria.

3. "The diagnostic significance of gait," Dr. Frederick Brodie, Vancouver. Abstract—(1) Mechanism of locomotion; (2) Classification of gait; (3) Grouping of the various diseases affecting gait through a study of morbid anatomy. Discussion opened by Dr. Geo. Hall, Victoria.

4. "Observations on operative treatment of fractures," Dr. Jas. A. Gillespie, Vancouver. Abstract—(1) Summary of observations and experiences regarding the open method of treatment of simple and compound fractures based largely on cases treated in the Cumberland Hospital during the last ten years; (2) Factors which determine when case is operative; (3) Time to operate. Technique, necessity of strictest asepsis; (4) Fixation methods. Rule to leave the smallest amount of foreign material in wound. (5) Results. Time of union. Non-union. Infection. Conclusions. Discussion opened by Dr. R. E. McKechnie, Vancouver.

Tuesday, 8 p.m.

1. "The thyroid and parathyroid problem," Dr. J. Halpenny, Winnipeg. Discussion opened by Dr. E. McKechnie, Vancouver.

2. "Exophthalmic goitre with delusions," a report on two cases with operation, Dr. H. Robertson, Victoria. Discussion opened by Dr. G. H. Manchester, New Westminster.

3. "Radium-therapy," Dr. F. L. de Verteuil, Vancouver. Abstract—(1) Methods of application. (*a*) Varnish apparatus (with demonstrations); (*b*) Radium water; (*c*) Radio-active earth; (2) Cases treated by radium (lantern slide demonstrations). Discussion opened by Dr. H. R. Nelson, Victoria.

Wednesday, a.m.

No session held, in order to permit of members attending first convocation of the University of British Columbia at South Park School at 10 a.m.

Wednesday, 2 p.m.

1. Presidential address, Dr. J. D. Helmcken, Victoria.

2. "The penalties of delayed diagnosis of urinary diseases,"

Dr. G. S. Gordon, Vancouver. Abstract—Gonococcus infection, colon infection, staphylococcus infection, proteus infection, tubercular infection, papillomata, cancer, hypernephromata (so-called), catculi, prostatic adenomata, results of early and late treatment. Discussion opened by Dr. J. A. Campbell, Vancouver, followed by Dr. A. W. Hunter, Vancouver, and Dr. H. Robertson, Victoria.

3. "Tubercular peritonitis," Dr. G. E. Seldon, Vancouver. Discussion opened by Dr. J. W. McIntosh, Vancouver.

4. "Some observations on appendicitis," Dr. R. V. Dolbey, Vancouver. Abstract—(1) Increase in appendicitis in the last five decades; (2) Causes lying in the essential change in the nation's diet during that period; (3) Influence of pressed, canned and chilled food; (4) Significance of fermentation in the colon, directly attributable to bacterial flora in the large intestine; (5) The essential factors in diagnosis; (6) Accepted methods of treatment. Discussion opened by Dr. H. E. Ridewood, Victoria.

1. General business; 2. Report of secretary and treasurer; 3. Reports of standing and special committees; 4. Election of officers; 5. New business.

On account of the unavoidable absence of Dr. J. D. Helmcken, the president, the Hon. Dr. H. E. Young, a graduate in medicine of McGill and minister of education for British Columbia, very kindly consented to address the gathering. Dr. Young has always taken a deep interest in the welfare of the medical profession and his remarks were listened to with much pleasure.

The election of officers resulted as follows: president, Dr. A. S. Monro, Vancouver; vice-president, Dr. Hermann Robertson, Victoria; treasurer, Dr. P. A. McLennan, Vancouver; secretary, Dr. J. W. McIntosh, Vancouver. Executive committee: Dr. H. E. Ridewood, Victoria; Dr. H. W. Riggs, Vancouver; Dr. G. H. Manchester, New Westminster.

The association will meet in 1913 at Vancouver.

SASKATCHEWAN MEDICAL ASSOCIATION

The sixth annual meeting of the Saskatchewan Medical Association was held in the Y.M.C.A. at Moose Jaw from September 3rd to September 5th last. After the address of welcome, delivered by Alderman Pope, the acting mayor, the members present were duly registered and a short address was given by the president, Dr. Radcliffe. The reports of the various committees were then read, and these were followed by the report of the secretary, Dr. Wilson, of Regina. During the discussion which followed the presidential address, a resolution was passed making Dr. Roddick an honorary member of the Saskatchewan Medical Association and expressing the thanks of the association to Dr. Roddick for his interest in bringing about the formation of the Dominion Council.

On Wednesday, September 4th, the following papers were read: "Reporting of infectious diseases," by Dr. M. M. Seymour, commissioner of public health; address in surgery: "Some of the advances in surgery during the past quarter of a century," by Dr. Mundell, of Queen's University; "A visit to some of the European hospitals and clinics," by Dr. A. Croll, of Saskatoon; "Hygiene of youth," by Dr. V. E. Black, of Moose Jaw; "The difficulties of minor surgery," by Dr. B. Bayley, of Moose Jaw; "Pulmonary tuberculosis: some practical points in early diagnosis," by Dr. Wm. M. Hart; Address in preventive medicine, by Dr. T. A. Starkey, of McGill University; "Typhoid vaccination: exhibit of charts," by Dr. C. M. Sutherland, of Moose Jaw.

Thursday's programme commenced with a clinic at the Moose Jaw General Hospital, and this was followed by Dr. T. A. F. Corbett's paper on the treatment of syphilis. In the afternoon the following papers were read: "A few rambling remarks about obstetrics," by Dr. J. W. Turnbull, of Regina; and "Remarks about trachoma," by Dr. C. W. Bishop, of Regina.

On Tuesday evening the members of the association attended a performance of "Sweet Lavender," and on Wednesday evening a banquet was given in the Royal George Hotel.

The election of officers for the forthcoming year resulted as follows: honorary president, Dr. Radcliffe, of Moose Jaw; president, Dr. Low, of Regina; first vice-president, Dr. Peterson, of Saskatoon; second vice-president, Dr. R. H. Smith, of Moose Jaw; secretary, Dr. Arthur Wilson; executive council, Dr. Gorrel, of Regina, Dr. Monroe, of Saskatoon, and Dr. Leask, of Moose Jaw. The next annual meeting will be held at Regina.

It was recommended that, in future, the meetings of the association should be held in turn at Regina, Saskatoon, and Moose Jaw, as these are the three central cities of the province.

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"UNTO THE THIRD AND FOURTH GENERATION:" A STUDY IN EUGENICS

By J. G. Adami, M.A., M.D., Sc.D., F.R.S.

PHRASES, be they prose or poetry, which became ours in childhood, remain as our surest possessions. They may have had little meaning for us when first heard; they may have become part of ourselves by no conscious effort, through the mere force of iteration, but all the same they are apt to appeal to us, to be a part of our consciousness in a way that expressions of later acquirement cannot nearly approach. Thus it was that, casting round for a title for my talk to you this evening, the old phrase obtruded itself that, droned out Sunday after Sunday in the little village church of my boyhood, had become part of my being.

I do not know that it is a happy title; it inevitably suggests a text; it is pretty sure to have suggested that I am to indulge in a moral disquisition, when I am going to do nothing of the sort. I shall, it is true, have to dwell upon matters which constitute the basis of morals; that is inevitable in any discussion upon eugenics. These are matters which the public is accustomed to contemplate from their moral aspect, from the aspect of the soul's good, whence it follows that the same pensive public labels everything connected with them as immoral. Medical men, on the other hand, weigh and discuss them from the point of view of the body's good.

Thus, while admitting freely that body acts on soul, and soul on body, that the health of the one depends largely upon the health of the other, nevertheless, as a medical man I must treat my subject in an unmoral manner—nay more, I believe that we medical men accomplish most for the good of our fellows when we expose the cold

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Address delivered before the Canadian Medical Association, Edmonton, August 13th, 1912.

facts bearing upon heredity and eugenics without reference or recourse to morals. The cobbler does best if he sticks to his last. Wherefore I would ask you to understand that my title means merely this, that I want to discuss the effect of parental well-being upon the progeny, that I have been driven to employ this title because it reflects the almost universal confusion between sexual health and morals, and, I may add, because with that confusion, it pictures what, until the end of the nineteenth century, accurately figured the general belief, namely, that conditions affecting the parents influence the children even unto the third and fourth generation.

The last two decades, with the advent of Weismann, have registered a change in authoritative opinion. Weismann, in Germany, and before him, Francis Galton, in England, have through their writings convinced the world that properties acquired by the parent or parents are *not* inherited by the children. If we accept the doctrine of the continuity of the germ plasm (and the researches of the cytologist and embryologist show that we must accept it); if, further, we clearly recognize that that only is inherited which is or becomes the property of the individual at the moment of origin of that individual, at the moment that is, when the germinal matter of the male parent fuses with the germinal matter of the female parent and these twain become one, and that every property obtained by that individual after this event cannot be inherited, but is acquired—if we accept these two fundamental ideas, it has seemed inevitable that we must assent to this newer teaching.

Saying this I know perfectly well that in his later writings Weismann made an admission which largely modified his theory. He admitted that the germ cells might undergo modification while in the body of the parent. But your ordinary man is impatient of parenthetic qualifications. He grasps at broad general statements, and the public is to be pardoned if one important qualification has escaped it when, in successive publications, the Freiburg philosopher introduced so many subtle distinctions and qualifying conditions that it demands not a simple paragraph, but a course of advanced lectures, accurately to state the Weismannian theory of inheritance. The modern, popularly accepted doctrine is that acquired conditions are not inherited, and as a corollary, that the germ cells are unaffected, no matter what vicissitudes are undergone by the body at large—or if you will, by the body of the parent at large.

Do you see where this doctrine leads us? The sins of the fathers, so say these latter day prophets, do not tell upon the children. They prophesy soothly that, no matter how the parent ill-treats his body prior to conception, the progeny is unaffected: a man may have tuberculosis or syphilis and provided he does not give the disease to the mother and so bring about infection of the fœtus in the womb or in its passage to the outer world, the child is likely to be as strong and healthy as that of a perfectly sound parent. This, in fact, is being proclaimed, and widely proclaimed, at this very time; that the children of the slums and of degraded parentage, provided they are brought to Canada and given a healthy life upon the farm, develop into citizens of as good quality, citizens every whit as good, as those of good parentage. "Nurture" is everything, and "nature" negligible.

If the observed facts do not tally with this view, then we are told that the incidence of particular conditions in the offspring is due to diathesis: that the parent is not to blame; he succumbed to tuberculosis or alcohol in the first place because he inherited a weakened constitution from parents who had themselves succumbed; thus both father and child possess a stigma of degeneration that originated, Heaven knows how or when, in the family history; that bad stocks and feeble-minded and vicious families (and we have pedigrees of such stretching back for many generations) have arisen either by chance (they call it "mutation"), just as, for example, Cain had bad blood in him—or are to be traced back through countless ages, presumably to a mingling of the blood of Cain's stock, after he married that very shady personage, Lilith, of the nocturnal land of Nod, with the more respectable later offspring of Adam.

Or again, we are told that the observed weakness of the child of diseased parentage is not inherent, but due to environment: the child was born healthy, but the poor food and wretched surroundings into which he was born—the home conditions in the family of the drunkard or tuberculous—have prevented a healthy bringing up. Now let me state that I am sufficiently old-fashioned to repudiate this new-fangled "Weismannism."

I still hold on to the belief that the sins, so-called, of the parents against the body—or at least a very important series of such sins—may influence the progeny to its hurt. And what is more, I believe that these new-fangled ideas have their origin in the narrowness, and, if I may so say, chauvinistic provincialism of the zoologist. Those zoologists are, if I may so express it without offence, materialists of the most limited outlook; they are capable of recognizing only such changes as render themselves visible in the size and shape of parts; the more subtle changes of function, of chemical and physical activity, are outside the limits of their vision and to them are non-existent. One has only to consider for a moment to realize that underlying and determining the shape and structure of parts is the chemical composition of the same. The shape, and indeed the size, of any organ or part of the animal or vegetable body is the expression of the interaction between matter of a particular composition and its surroundings or environment. Our ultimate theory of inheritance must, therefore, be not morphological, determined by the shape of parts, but chemical, if not physical, determined by the properties of living matter. The wonderful chemical investigations of the last few years indicate that the molecules of matter endowed with life are of such extraordinary complexity of composition that they may undergo, nay, are constantly undergoing, fine changes in composition in the performance of function, without their general underlying structure being altered. There may be fine changes in the composition of the living molecules resulting in change of properties of first importance for the organism as a whole, without any immediate structural change showing itself in the individual. It is only when the alteration of environment has rendered these changes fixed and permanent that we can expect to find permanent morphological changes. It follows, therefore, that the first indication of altered state of the individual and its progeny tend to be ultramorphological, and that the methods of the morphologist, that is to say of the morphological zoologist and botanist, are not fitted to unravel the problem. They do not begin at the beginning.

In order that you may grasp the problem, let me put rapidly before you in graphic form the fundamental facts concerning the physical basis of inheritance.

We know, in the first place, as a matter of universal knowledge, that the individual, be it animal or plant, is liable to inherit properties equally from both father and mother. It may happen that in one family the progeny in the main appear to take after the mother, in another they equally are seen to have a greater resemblance to the father; in yet another, perhaps in most, some children take after the one parent, others after the other. Broadly, in the act of conception, the new individual receives heritable matter from both parents.

If now we enquire more particularly into the details of the process, we find that the zygote, the fertilized cell from which the whole future individual becomes developed, the new individual in fact, has a remarkable composition. In the fertilized ovum, or zygote, the cell body or cytoplasm is afforded by the mother—is supplied by the ovum. The amount of cytoplasm contained in the tail of the spermatozoon is so minute as to be not deserving of consideration except in regard to the midpiece which supplies the centrosome or minute portion of cytoplasmic matter which initiates cell division (Fig. 1). *The one constitutent which is afforded equally by both male and female cell is the nuclear matter.* Approximately equal portions of nuclear matter are contributed by the two parents to constitute the nucleus of the single cell which gives origin in the whole new individual (Fig. 2).

Here, therefore, in this nuclear material must be conveyed all the heritable and characteristic properties of the father and mother.

Next, it has to be borne in mind that, from the very beginning, in that process of cell division and multiplication which ends in the production of the fully formed individual with all its distinct tissues and organs, the cells which are destined to give origin to the germ cells, male or female,—to the spermatozoa and the ova,—are kept apart from those giving origin to all the rest of the body. Those other cells, as they multiply, become more and more altered in one or other direction, until some, for example, become bone cells, others nerve cells, others gland cells, and so on (Fig. 3). But the germ cells remain simple, or, as we term it, undifferentiated, throughout. At most, just prior to discharge they undergo a process of reduction whereby the chromomeres, or nuclear units, are halved in number, so that when the spermatozoon and ovum come together, the nucleus of the zygote, formed by the junction of their two nuclei, contains the number of "chromomeres" or nuclear units proper to that particular species, instead of being doubled in each successive act of fertilization (Fig. 4).

This, it always seems to me, is the central miracle of descent. Each one of us—and every living multicellular being—with all our extraordinary complexity of parts and organs, is developed from a simple undifferentiated cell—the egg—and that cell in its turn is not originated by the piecing together of minute elements from all the different tissues and organs of the parent, but is a direct descendant of the undifferentiated germ cells of the parents and grandparents. The germ plasm, as such always remains undifferentiated—the cells composing it always remain simple. This is what is meant by the continuity of the germ plasm. The germ cells give rise to the soma, and at the same time to the next generation of germ cells, while the soma gives rise to nothing but itself, and ultimately perishes. Death is inherent in the soma; the germ cells have the potentiality of carrying on the torch of life through unending generations—or, in other words, the germ plasm is potentially eternal. These germ cells divide, and divide giving origin to similar simple cells, until such time as one of them, becoming discharged, encounters a germ cell of the other sex—and the result of the combination of the two is that marvellous complex of cells of all orders, the animal body, enclosed in which is a group of unaltered cells, the germ cells, which, in their turn, undergoing discharge, are capable, upon fertilization, of helping to give origin to another complex individual (Fig. 5). Thus, to express this order of events in scientific language, the undifferentiated germ cells or blastogenic cells give origin to the soma or body, composed of blastogenic and somatogenic cells. The blastogenic cells are passed on from generation to generation in an undifferentiated condition.

It is obvious that if an adult individual loses, for example, an arm, that loss does not reproduce itself in each of the hundreds of ova situated in the ovary, if the individual be a female, or the billions of spermatozoa in the testes, if the individual be a male. *Acquired deformities*, as such, are *not* reproduced in the progeny. Weismann, for instance, cut off the tails of twenty successive generations of rats, and the twenty-first generation had as well developed tails as had the first. Nor, again, will the shrinkage of a part in the parent, brought about by want of use, lead to small size of the same part in the offspring. The woman who takes no exercise, and whose biceps as a consequence is flabby and miserably small, does not necessarily have a child with small biceps. The accompanying poor nutrition of the mother, it is true, may tell upon the vigour and vitality of the child; it may be puny and miserable; but the whole body will be affected and not one particular part.

Thus far we wholly agree with Weismann, and with his statement:[1] "By *acquired* characters I mean those which are not preformed in the germ, but which arise only through special influences affecting the body or individual parts of it. They are due to the reaction of those parts to any external influences apart from the necessary conditions for development. I have called them *somatogenic* characters because they are produced by the body or soma, and I contrast them with the *blastogenic* characters of an individual, or those which originate solely in the primary constituents of the germ (*Keimes Anlagen*). It is an inevitable consequence of the theory of the germ plasm, and of its present elaboration and extension so as to include the doctrine of determinants, that somatogenic variations are not transmissible."

Now this, we admit, is an inevitable consequence of the theory, but let us see whether it is an inevitable consequence of the facts. In other words, is it not possible, and have we not evidence to prove, that modifications of the soma or body which originate during the lifetime of the individual independent of any inheritance, may affect the germ cells in such a way as to bring about a like modification in its body?

Let us proceed by stages. First, do we possess evidence that the germ plasm in the germ cell is capable of modification outside the body, or is it absolutely fixed and inert until such time, it may be, as it is stirred to activity by the attraction to and fusion with a germ cell of the other sex? Perhaps the clearest evidence that it is susceptible to outside influences is afforded by Bardeen's experiment.[2] It is possible to fertilize frog *spawn* experimentally outside the body by collecting and discharging over it frog *sperm* and from this fertilized spawn to obtain perfectly developed frogs. But now, if the sperm be subjected for a short period to the action of *x*-rays and then be employed for fertilization, the eggs segment and the early larval stages are passed through, but the process of development is arrested in a few days—the larvæ all die prematurely. None survive beyond the second week. Obviously the germ plasm in the spermatozoa is acutely susceptible to the action of this physical agent.

Next, have we evidence that the germ plasm in the germ cells is capable of modification during the time that it exists in the body of the individual prior to ripening? To this question, again, the answer must be an unhesitating, yes. Quite the most striking evidence is that afforded recently by Tower.[3] Tower made the remarkable observation that if shortly before the maturation of their germ cells, ova and sperm, he subjected potato beetles to intense environmental change, to cold and humidity, he obtained offspring widely different from the parents—and what is more the results appeared to be permanent, or at least heritable through further generations. The elytra or wing cases of the normal beetles showed one pattern, those of the progeny of the cooled beetles showed another. When crossed, these altered forms bred true, nor did they lose their acquired characters in subsequent generations. Similarly, among plants, Macdougal[4] has shown that in the evening primrose by injecting certain chemical solutions into the immature ovaries, and so by subjecting the oocytes or female germ cells to certain chemical agents, he obtained seeds which afforded plants, some at least of which departed widely from type: he established new varieties.

In the body the germ plasm *is* capable of being influenced by physical and chemical agents. This is evidence of the first importance for us as medical men. We have long observed that intoxicants affecting the body of the parent are liable also to affect the germ cells, but our morphologist confrères, zoological and botanical, have given as much heed to our data as did the priest and the Levite to the wounded man of the parable. They have not thought them worth even twopence. And that because our observations deal almost wholly, not with morphological variations, but with functional change.

Let me indicate the data to which I refer. I have brought them forward on previous occasions and they have never been contradicted. Take Constantin Paul's figures collected in the fifties.[5] Of thirty-two pregnancies in which the husband alone was exposed to lead in the course of his work, there resulted twelve abortions, and of the twenty children born alive, eight did not survive the first year, four died during the second year, five during the third. The thirty-two pregnancies yielded only three children living beyond the third year. What can this mean other than that the lead had influenced the germ cells of the fathers. Nor is this all, Paul, Roque, Sir Thomas Oliver, and other investigators have called attention to the great frequency of epilepsy, idiocy, and imbecility in the children of workers in lead, and it is well established that such feeble-mindedness, where not of sufficiently high grade to cause barrenness, is passed down to later generations.

We have identical data regarding workers exposed to the fumes of nitrate of mercury. (Lizé.[6])

	Number of Cases.	Number of Pregnancies.	Abortions, Premature labour, and Still-births.	Surviving Infants.	Remarks.
Mother alone exposed	3	7	4	3	
Father and Mother exposed	2	14	5	9	Of these, only three survived fifth year.
Father alone exposed	?	12	4	8	Of these three died before fourth year. One alone vigorous.

How about the commonest of all intoxications, the alcoholic? You will know, perhaps, that there is waging at the present time, an active discussion upon this subject—that Karl Pearson,[7] for instance, the notable statistician and Galtonian Professor of Eugenics in the University of London, has compiled some remarkable statistics to show that the children of alcoholics in Edinburgh are if anything superior in capacity to those of abstainers. "Auld Reekie," we admit, is a great city, and its inhabitants are popularly said to consume much alcohol, but this has been a little too much to swallow, and so Sir Victor Horsley[8] has followed upon Professor Pearson's tracks, has seized upon his figures and rent them in a manner fearful and wonderful to behold.

Let me admit that the subject is so complicated that it is difficult to arrive at a clear comprehension of the exact state of the case. The home misery and poverty, for example, brought about by alcoholism, place the offspring at a disadvantage from the very onset. If the mother be an alcoholic, then the child, nourished by the maternal blood, is liable to malnutrition and to show intoxication while growing in the womb. When, however, we come to compare the family statistics for confirmed alcoholics and for the ordinary temperate population, there can be no doubt but that alcohol is responsible for an appalling amount of early death. The vitality of the offspring is gravely affected and, for myself, from families of alcoholics observed by me, I cannot but feel that the children of confirmed drunkards show an increased susceptibility to the action of relatively small amounts of alcohol.* It is, however, by experiment in which we can cut out all complicating factors that we gain clear proof of the deleterious action of alcohol upon the germ cells, and so upon the next generation. Only recently Stockard,[9] has published some most conclusive observations. Employing guinea pigs, he placed them in a state of chronic alcoholism by treating them for six days per week with alcohol fumes almost to the point of intoxication. Forty full term matings of various combinations were made with these animals. Treated males were paired with normal females, treated females with normal males, treated males with treated females. Altogether twenty-five out of the forty matings either gave no result or the embryos aborted early and were eaten by the mother. Fifteen matings produced in all twenty-five young (in place of about seventy), of which at the time of writing, two had reached maturity, four were young

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*A view amply supported by the more exact observations of Legrain *Heredite et l'Alcool*, Paris, Doin, 1889.

but seemed normal. Of the remaining nineteen, eight were still-born or aborted, seven lived for a few days after birth and then died in convulsions, four were in utero when the mothers were killed, and of these one was deformed. Professor Stockard has been so good as to write to me the exact details of what is the crucial test of this action of alcohol upon the germ cells, namely, of the pairing of treated males with normal females—crucial because in the opposed pairing of treated females with normal males it may be objected that the ill effects are due to the disturbances induced by the maternal blood while the offspring are in utero, are acquired and not inherited. There were twenty-four such matings.

RESULTS OF TWENTY-FOUR MATINGS OF ALCOHOLIZED FATHER WITH NORMAL MOTHER (GUINEA PIGS)

14 matings gave early abortions or were negative.
5 matings gave still-born litters (in all 8 young).
5 matings gave living litters (in all 12 young).

Of the twelve living young:

Died in convulsions soon after birth	7
Survived	5

The twenty-four matings yielded five surviving young, and when two months old these five survivors were half the usual size. *The average litter of the healthy guinea pig is between four and five.* Therefore under the influence of alcohol twenty-four matings only produced as many surviving young as might be expected from a single pairing of two healthy animals.

There could be no clearer, more positive evidence afforded of the effects of alcohol upon the next generation. The accompanying table by Dr. Mott shows that parallel results are encountered in man. (See page 973).

Let us pass to the consideration of another group of poisons. Nowadays I take it every school boy knows that the bacteria and other microbes of infectious disease produce their effects by the chemical substances which they liberate into the blood during their growth in the body or when they die in the tissues. The infections, therefore, are one form of intoxication. Do the bacterial poisons circulating thus in the blood influence the germ cells? Here, again, the general sense of the medical profession, the accumulated result of individual observations, has long been to the effect that they surely do.

EXAMPLE OF DRUNKEN FATHER AND INSANE OFFSPRING

FATHER. Born 1830. No family history of insanity, fits, or nervous disease. Chronic drunkard from boyhood. In asylum, June 12th to July 11th, 1876; and January 19th to February 8th, 1892.				MOTHER. No history of insanity in family.			
Daughter. Born 1859. Admitted to asylum Oct. 24th, 1874. Discharged and readmitted on subsequent occasions. Still in asylum.	Daughter. Born 1860. Admitted to asylum Oct. 6th, 1874. Discharged and readmitted on subsequent occasions. Still in asylum.	Son. Born 1862. Admitted to asylum June 29th, 1877. Discharged and readmitted and discharged on two subsequent occasions.	Daughter. Born 1869. Admitted to asylum Jan. 2nd, 1892. Discharged and readmitted. Still in asylum.	Son. Born 1872. Admitted to asylum Nov. 11th, 1888. Died of tuberculosis Sept. 4th, 1902.	Son. Not been in asylum.	Daughter.	Daughter.

Time and again the practitioner has observed a relationship between chronic or acute infection suffered by either parent and abortion, blighted ovum, still birth, or monstrosity. And we have more exact observations; investigators like Gheorghiu, come to our support. Gheorghiu[10] made an extended enquiry into the health conditions of the parents in a long series of monstrous births occurring in the Paris hospitals, and his statistics show most convincingly that there is a direct relationship between parental tuberculosis, syphilis, and acute infections affecting one or other parent and these gross examples of maldevelopment.

Time and again, also, the ordinary practitioner has been convinced that the children of those suffering from tuberculosis and syphilis are not merely of lowered vitality, more liable to succumb to childish ailments, but, notably in the case of tuberculosis, exhibit a peculiar liability to succumb to the same parental disease, exhibit in short a diathesis. But here again conditions are so complicated that it is difficult to secure a series of absolutely decisive cases. Not only have we to weigh carefully the possible influence of the disturbing factors noted in connexion with alcoholic intoxication—influence of maternal malnutrition upon the growing embryo, of bad nutrition and environment during childhood, and so on, but in addition there has to be discounted the possible direct acquirement of the infection by the fœtus from the mother during pregnancy or parturition, or again by the suckling infant. For a sure answer we have once more to appeal to experiment—and experiment once more gives an affirmative answer. Carrière, for example, inoculated a series of guinea pigs, both male and female with the toxines or soluble products of the tubercle bacillus.[11] Here are his results:

TUBERCULOUS TOXINES—CARRIERE

	Still-born.		Died before 16th day.		Survived.		Total Births.
	No.	Per cent.	No.	Per cent.	No.	Per cent.	
Male and female both inoculated	13	52·0	7	28·0	5	20·0	25
Female alone inoculated.......	7	26·9	9	34·6	10	38·4	26
Male alone inoculated.........	5	16·6	3	10·0	22	73·3	30

You will see from this table that the circulating toxines have had a very definite effect in reducing the numbers of the litters and increasing the numbers of the still-born progeny.

Similar results have been obtained by Lustig[12] working with chickens, and Watson,[13] working under Mott in London, employing guinea pigs, when they made successive inoculations of a very toxic vegetable extract, abrin, which in its properties closely resembles the bacterial toxines. Both obtained diminished fertility, increased number of monstrous births, poor vitality—and both, like Carrière in the case of tuberculin, note particularly that the offspring of the animals subjected to these toxines, instead of being rendered more resistant to the particular vegetable poison, were, on the contrary, distinctly more susceptible. This is wholly on a par with the common observation of medical men that the children of those suffering from advancing tuberculosis are more liable to succumb to tuberculosis than are those of healthy individuals.

Let me now for a moment gather up the threads of my argument. I have proved to you: that the essential germ plasm which conveys the heritable characters from generation to generation is not inert and incapable of being influenced, but on the contrary is susceptible to physical and chemical agents affecting the body and circulating in the blood; that intoxicants and the poisons of infectious disease have a deleterious effect upon the offspring; that they are apt to cause relative infertility, still-births, monstrosities, and imperfect developments, lowered vitality with tendency to death during infancy, instability and imperfect development of the nervous system showing itself in convulsions, epilepsy, imbecility, and insanity; also that with some intoxications the offspring are rendered more susceptible to the action of the particular agent which had poisoned one or other parent.

It is rather a ghastly record. The only comfort to be extracted is this, that if there are agents which thus act deleteriously upon the germ cells, while in the bodies of the parents, it is equally certain, that there must be other agencies capable, in favourable conditions, of benefiting the germ plasm and improving its qualities. Favourable environment thus leads to improvement of the race and progressive evolution.

I have still, it will be seen, to take up the question as to whether, not these introduced poisons but influences primarily affecting the body can, secondarily, have their effects upon the germ cells—in other words whether there are any orders of conditions acquired by the body of the individual—somatogenic changes—that can affect the germ cells and so affect the offspring, producing the same order of change as had been brought about in the parent. Not to beat about the bush, let me recount to you two recent observations, one from the animal, one from the vegetable, world. Sumner[14] has shown that if similar broods of young mice be brought up, the one in a warm temperature (about 21°C.), the other in the cold (about 5° C.), they show recognizable differences in growth. The mean (average) length of tail, of feet, and of ears of those brought up in the warmth is distinctly greater than of those kept in the cold. And here is the important fact: the young of the two groups, although reared together in a common room, all, that is, subjected to the same temperature, continue to present the greater or lesser growth of tail, foot, and ear acquired by their parents. Bordage's observation is of the same order.[15] Ordinary peach trees planted in the warm climate of the Island of Réunion or Mauritius from being deciduous gradually acquire an almost evergreen habit —and now if seedlings from these trees be grown elsewhere in a cooler climate, these seedlings manifest the same tendency to be evergreen and not deciduous. Of course it may be urged, it has been urged, that in both these cases the germ cells were subjected to the same temperature changes as were the bodies of the parent individuals, that these are not, therefore, necessarily examples of inheritance of properties of *somatogenic* acquirement. Quite so. But certainly, in the first place, for our purposes, whether they are instances of the somatogenic or blastogenic inheritance of acquirements is of minor importance, and, in the second place, they afford further proof of the susceptibility of the germ cells to modification in their properties. For us as students of medicine the point of especial interest is that the work of the last decade has developed greatly our knowledge of what we term the internal secretions. We find that many of the glands of the body, such as the thyroid, the adrenals, the pituitary, the ovaries, and testes, not to mention the liver and the mucous membrane of the intestine, in their normal activity discharge into the blood substances which, carried to other organs, not merely influence their work but are absolutely essential to the proper carrying out of their function. We recognize, in fact, a series of diseases due to the excess or the defect of these internal secretions—conditions such as exophthalmic goitre, myxœdema, Addison's disease, acromegaly, and so on—while other so-called metabolic disturbances, such as adiposity, gouty states, etc., are being increasingly recognized as closely allied. If the cells of particular organs are highly susceptible to these "hormones" and other active principles of the secretions of other organs, surely is it not likely that the parent germ plasm, the cell matter which by its active growth is capable of giving origin to all these organs and tissues, should likewise be susceptible to their action, and influenced by their excess or deficiency? Nay, should we not expect that bodies of this nature developed by the cells in their activity should act with greater ease upon the living substance of the germ cells than extraneous drugs are likely to act. As a matter of fact, alterations in such glands as the thyroid, the pituitary, the adrenal cortex, the pineal, are found to have a profound influence upon the sexual function. In certain cases this is arrested, in others stimulated to premature activity. I will only say here that evidence is accumulating to prove that influences acting upon these organs of internal secretion, conditions acquired by these organs, tell upon the germ cells, and are apt so to modify them that the offspring in their development show excess or deficiency in the function of the glands implicated in the parents, that so conditions acquired by the parents reproduce themselves in, and become inherited by, the offspring. I will not say that this is wholly proved—it is not—but I would lay down that it is along these lines that the direct inheritance of morbid states will most surely be demonstrated.

But this *inheritance* of disease is far from being everything. There is, from the point of view of eugenics, another equally important section of my subject. I have only so far discussed true inheritance, conditions in which disturbances impressed upon the germ cells before fertilization affect the offspring. I must at least glance at the terrible effects of congenital disease, and more particularly of infections conveyed to the growing individual while in the womb or during parturition. With a fuller realization of the frequency of these congenital diseases, of the havoc these are playing upon individual lives, the misery, ill-health, and ruin that they inflict, with the surer recognition of the presence and after-effects of what euphemistically we speak of as the contagious diseases, brought about by more exact methods of diagnosis, such as the Wassermann reaction and the actual recognition under the microscope of the gonococcus and the spirocheta pallida, we have, during the last decade more especially, come to a realization of the hideous frequency of these diseases and their ill-effects upon the innocent of the second generation.

When it is accepted that at least a half of gynæcological practice is due to gonorrhœa and its results, that a large proportion of the cases of infantile blindness is of gonorrheal origin, that, as demonstrated by the Wassermann test, practically all cases of locomotor ataxia, and nearly all cases of general paralysis of the insane are of syphilitic origin; when we know that most cases of multiple successive abortions are syphilitic, and recognize the puny, miserable parodies of humanity doomed in most instances to an early death, that too often are the result of syphilitic disease in the parent; when we realize the preventible ills that follow in the train of these venereal diseases, I wholly agree that the time has come when we should no longer refer to these matters by circumlocutions, when for the good of the coming generations we should openly wage war against gonorrhœa and syphilis, and above all should, for the safety and welfare of our children, instruct them as to the dangers they must ward against—not merely on account of their own health and happiness, but for the sake of the generations yet unborn.

At the Dominion Day dinner in London the other day, after listening to Mr. Foster's magnificent oration, the agent-general for Australia, strong at heart in the knowledge of what the Commonwealth was accomplishing in the matter of imperial defence, said drily that if it depended only upon Canadian talk then surely the safety of the Empire was assured: there would be Dreadnoughts to spare. We have to confess humbly that in more than one matter, while we are talking, Australia has been doing. Melbourne has led the world in a census upon the extent of syphilitic infection in her midst.* At the meeting of the Australian Medical Congress two years ago a resolution was passed to the effect that syphilis is responsible for an enormous amount of damage to mankind, and that all preventive and remedial measures against it are worthy of the utmost consideration. This resolution was presented to the government of Victoria accompanied by the statement that there was a sharp difference of medical opinion respecting the extent and distribution of the disease. Acting under the advice of its chief health officer, Dr. Ham, the government sanctioned a collective investigation with the aid of the medical profession in Melbourne. The government thereupon appointed an expert, Dr. Conrad Hiller, to make the official tests; syphilis was made a compulsory but impersonal, notifiable disease for a period of twelve months within the Melbourne area; medical men were instructed to report cases and send a specimen of the blood to be examined by Dr. Hiller. Certain suspicious conditions, like thoracic aneurysm, multiple abortion, death of three children in a family under five years of age, were also to be notified.

In all, fifty-five hundred cases were reported during the twelve months. For four months, at the end of the period, all the cases visiting two of the hospital clinics (eye, ear, nose, and throat cases) were tested. The results showed that out of a hospital population of five hundred and fifty, at least thirteen per cent. were syphilitic. The hospital population was superior to most hospital populations, the majority presenting themselves for minor ailments having nothing to do with syphilis.

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* I see from "Problems in Eugenics, paper communicated to the first International Eugenics Congress," received while this article was passing through the press, that Scandinavia now enforces compulsory notification of venereal disease, but am uncertain whether the action there preceded or followed the movement in Melbourne.

What is more, Dr. Barrett,[16] who studied the eye cases, lays down as the result of this routine testing, that it was striking how the syphilitic taint was responsbile for bad after results in operation upon the eye, for lowered vitality and liability to secondary infection. If a cataract or other operation failed to heal, and became infected, he almost constantly found that the patient gave a positive Wassermann test, or a history of previous syphilis. Thirteen per cent.—one in every eight persons!

Have we any right to suppose that Edmonton, Calgary, Vancouver, Winnipeg, Toronto, or Montreal are in this respect any better than Melbourne? Surely with the knowledge that we now possess—if only with the knowledge that we as a profession possess, of the means of remedy—the time has come for us to unite in eradicating from our midst a scourge which brings in its train such hideous after-effects.

In support of my plea let me say that New York is already dealing with the matter. Upon May 1st of this year, the board of health of that city—a body which has led the municipal anti-tuberculosis campaign on this continent—put into effect a well thought out scheme along similar lines, whereby the officers in charge of all public institutions of the nature of hospitals and corrective institutions, are required to report promptly all cases of venereal disease, and all physicians are requested to afford like information regarding private patients under their care, excepting that the name and address of the patient need not be reported. All information so obtained is to be treated as absolutely confidential and not to be accessible to the public. The department of public health is prepared to make free bacteriological examination and diagnosis of material submitted when the data required for registration are furnished, and provides and distributes circulars of information in relation to these diseases.

It may be objected that all this is not a matter for dinner and after dinner conversation—that like your fashionable preacher I should have chosen for this popular address something so choice that it would offend the susceptibilities of none of my hearers, and let me add, have done no good to anybody. But I say that when a false scientific theory has been disseminated, and is being popularized and applied wrongly to the hurt of the future generations, it is the physician's right, nay, it is his duty, to call a halt and expose the truth. When it is being taught that parents may subject themselves to intoxications and infections and that their offspring in their bodies and in their health pay no penalty, that the race does not directly suffer from the follies of individuals, that it is perfectly sound policy for this young country to welcome as citizens those of degraded or depraved parentage; then I hold that it is the duty of the physician to tell the truth as he knows it; and to explain in clear, unveiled language the basis of his belief.

I have brought forward these matters to-night, not on moral grounds, not for the soul's salvation of any here present, though I would say let him that readeth understand and apply what I have said, but because with all who have the interest of this great country at heart I want it to be realized that clean living makes the great nation; that if the parents eat sour grapes the children's teeth, ay, and much more than their teeth, are liable to be set on edge, that evil living must tell upon the race even unto the third and fourth generation.

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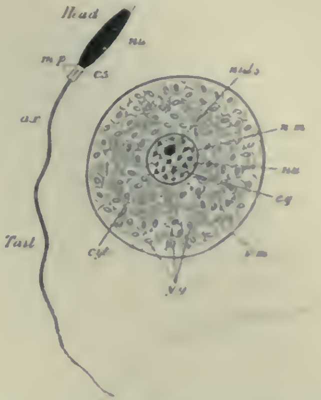

Fig. 1.—Diagram of typical Spermatozoon and Ovum, the former much more highly magnified than the latter.

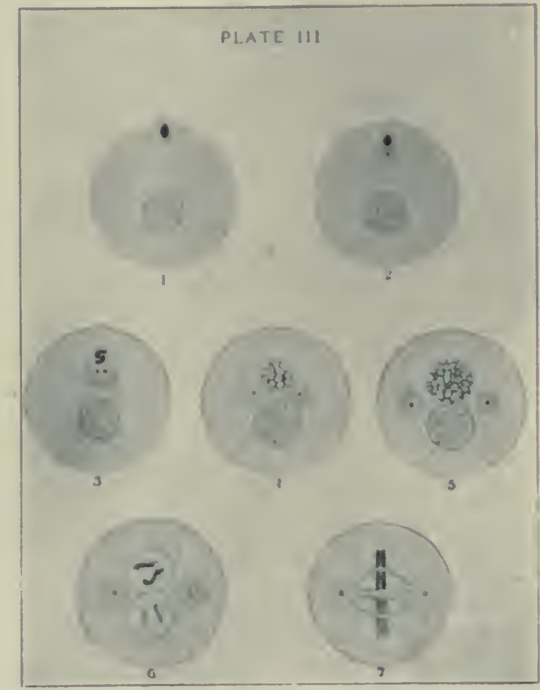

Fig. 2.—Schematic representation of the succession of events in the process of fertilisation, from the time of entrances of the spermatozoon (*sp.*) into the oocyte, until the fusion of the nuclear chromosomes of the male and female cells to form the single nucleus of the ovum.

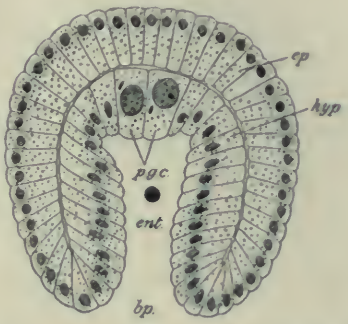

FIG. 3.—Section of the Gastrula of an Arrow Worm (Sagitta) showing the primordial Germ Cells. (After O. Hertwig.)

b.p., blastopore; *ent.*, enteron; *e.p.*, epiblast; *hyp*, hypoblast; *p.g.c.* primordial germ cells.

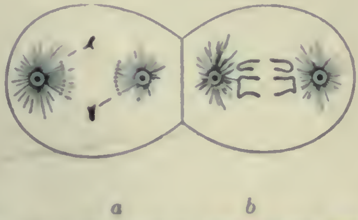

FIG. 4.—Two cells of segmenting egg of *Ascaris megalocephala*. *a*, Destined to give rise to body cells, shows diminution and casting out of some of its chromatin. *b*, The germinal blastomere shows no such reduction. (After Boveri.)

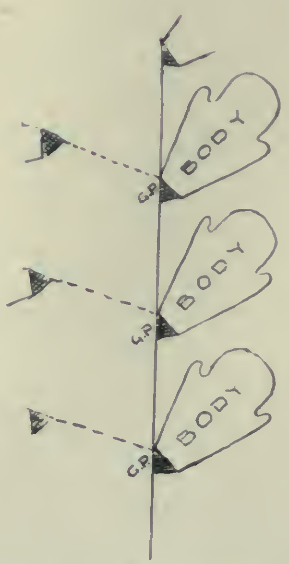

FIG. 5.—Schema of descent, illustrating the continuity of the Germ plasm, (G.P.)

DISPLACED AND MOVABLE KIDNEY IN WOMEN: ITS SYMPTOMATOLOGY, DIAGNOSIS, AND TREATMENT

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THE pathologic condition in women produced by displaced and movable kidney has not, in my opinion, received the attention it deserves at the hands of the medical profession. This pathologic condition of the kidney has been recognized for many years. Mesue, of Venice, in 1561, seems to have been the first to draw attention to movable kidney. The ancient writers on the mobility of this organ are Francis Pedemontanus, in 1581 and 1623, and Riolan, in 1682. ("Surg. Dis. of Kidney and Ureters," Morris, Vol. I, 1903.) Riolan was evidently the first to call attention to the importance of this condition. We find much written on the subject in modern literature, but with such divergence of opinion that the subject cannot be considered as definitely settled by any means. These two conditions give rise to a train of morbid symptoms which are not recognized as often as they should be, and a woman suffering from them is condemned to a life of greater or less suffering, unless she falls into the hands of a medical man who recognizes the condition and affords her the relief to which she is entitled, either through surgical means or by some prosthetic appliance.

In the first place, all displaced kidneys are not movable ones, and it is not necessary to be able to palpate a kidney in the pelvis, or grasp it between the fingers and move it about in the abdomen, before it will cause symptoms sufficient to make a woman more or less of a chronic invalid.

It has been the experience of many of us to be consulted by women, generally of the thin, spare type, with long waists, who complain of a dragging pain in the loin, often shooting downwards into the pelvis, with disturbed digestion, gastrointestinal flatulency, and a generally bedraggled air, who have run the gamut of their

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medical acquaintances for relief, only to be disappointed, until the true pathology was diagnosticated, and, after the kidney was properly replaced, to see all their pains and aches vanish and a great gain in weight follow the surgical or prosthetic procedure.

I have repeatedly had women tell me that their physicians advised them not to have their kidneys stitched up, as they would only prolapse again. They might as well argue against the radical cure of hernia, because some of the operated cases relapse.

The capsule. The kidneys are surrounded, first, by the fibrous capsule which adheres closely to the gland. Next, they are enveloped and supported by a capsule of connective tissue derived from the parietal layer of the extraperitoneal fascia. This capsule contains a greater or less amount of fat, and when this fat is scanty the capsule may be mistaken for peritoneum or the fascia transversalis in operations on the kidney.

According to Longyear,[1] these capsules are reënforced by still another, the perirenal fascia or Gerota's capsule. "This capsule is composed of the subperitoneal fascia which splits into two lamellæ, upon the lateral aspect of the body on either side, from which the parietal peritoneum is reflected, to pass on to and over the ascending and descending colons respectively. At this point the fascia divides into two layers, one of which passes over the front, the other over the back, of the kidney on each side. The anterior layer, after crossing over the kidney in front, is continued, and joins its fellow of the opposite side; the other, or posterior, passes behind the kidney and is continued across the psoas muscle to be inserted into the lateral aspects of the bodies of the vertebræ near their anterior surface. In that way there is formed a sac which is closed above and below, and entirely so toward the median line of the body."

The fossæ in which the kidneys lie are much shallower and wider in women than in men, hence the greater proportion of movable or displaced kidneys in the female than the male.

Frequency of occurrence. The late Byron Robinson, of Chicago, maintained that all women had palpable kidneys; that none of them were pathologic and, consequenetly, nephropexy was unnecessary. This, of course, was an extreme view. Other authors vary widely in their estimates. Some base their observations on post-mortem examinations; others from clinical observations.

A safe average would be from five to seven per cent. in women and two to three per cent. in men. By these percentages I mean those patients who present themselves for examination for relief from an ailment which can be directly traceable to a movable or displaced kidney. There is no question but that a much larger proportion of people have displaced or movable kidneys, but as they cause no discomfort they are not to be considered in this connexion.

Ætiology. It is well to first settle in our minds just what constitutes a movable or displaced kidney. I cannot do better than adopt the classification of Wilson and Howell[2]:

1. Kidney which has merely prolapsed.
2. Kidney has prolapsed and lower pole has rotated inwards. In these cases there is usually no expiratory upward movement on abdominal nephroleptique, but the kidney will return to the normal position on recumbency.
3. Kidney has prolapsed, lower pole rotated inwards, and has further undergone anterior displacement. There is, in this case, no tendency to return to the natural position on recumbency, but the kidney tends to become more prominent immediately beneath the anterior abdominal wall.
4. Kidney has undergone rotation only; there has been no prolapse; it lies high up, and is often not palpable without an anæsthetic.

It would seem that all the symptoms of displaced or movable kidney can be explained under this classification. Harris, of Chicago (quoted by Guiteras: *Urology*, Vol. I, 1912, p. 407), "divides the body into three zones—the upper, the middle, and the lower—by drawing three planes through the body transversely. He takes the tips of the tenth ribs as the landmarks, because they are fixed points. Finally, the distance between the upper sternal notch and the upper margin of the symphysis is taken and a line drawn between these two points upon which the length of each zone is noted. These measurements give us Harris's Index No. 1. When this index is above 77 or 78, the kidney is palpable; when below, palpation is negative."

Excluding the cases of congenitally displaced kidney and Glénard's disease, the factor most productive of displaced kidney is traumatism. This may operate through the action of a fall, a strain, by tight lacing, or by a blow or crushing injury over the lumbar region, the latter occurring most frequently in men. I have notes of two cases of displaced kidney occurring in nurses through stepping down suddenly from a high step; another occurring in a woman from being pushed from a street car and falling violently to the pavement.

It is claimed by some investigators that the lax condition of the abdominal walls following pregnancy is an important factor in the ætiology, but as the abdominal walls have nothing to do with the support of the kidney, I do not consider pregnancy as playing any part in the causation. The rôle which the abdominal muscles play is that of preserving the intra-abdominal pressure. How often do we open the abdomen through lax parietes and find the intra-abdominal pressure intact! As Carstens, of Detroit, has pointed out, the kidney is an extra-abdominal gland, and hence is not subject to the same disturbances as the intra-abdominal organs. For instance, we frequently find all of the abdominal contents in a state of ptosis, while the kidney remains in place, and *vice versa.* (Carstens, J. H., *Amer. Jour. of Surg.*, January, 1912.)

Any increase in the size and weight of the kidney must have an important bearing on its displacement downwards, such as chronic congestion, hydronephrosis, pyelonephritis, etc. Cirrhosis of the liver, chronic enlargement of the liver, from malaria and other toxæmias, are causative factors, by pressing on the kidney and tending to its displacement.

Mr. Lane has shown that adhesions may extend from the pylorus, the duodenum, and from the liver in the region of the bile ducts on to the anterior surface of the right kidney; hence, an overloaded condition of the cæcum, chronic constipation, together with a dilated and prolapsed stomach, may all contribute to the displacement of the kidney.

When we consider the shallowness and greater width of the renal fossæ in women, more especially in that type where the waist is long and narrow, and where there is usually a minimum of fatty deposit, we can easily understand how readily all the beforementioned agencies may act in producing this pathologic condition. I do not consider stone in the kidney in this connexion, as that is in a class by itself.

Symptomatology. Usually the first syptom of movable or displaced kidney is pain. This varies from that of a dull, aching character to the agonizing pain of Dietl's crisis. According to Fenwick,[3] if the kidney is movable and the pelvis somewhat distended, the patient lies on the affected side for relief; while, if the kidney with distended pelvis becomes fixed through inflammatory adhesions, the patient lies on the sound side.

If the kidney is displaced downwards, towards the pelvis, the pain often simulates appendicitis, and an operation for appendicitis has not infrequently been performed, while the offending organ was a displaced kidney. On the other hand, if adhesions extend from the liver over the anterior surface of the right kidney, the symptoms may be mistaken for gall-bladder disease, especially when the gall ducts are encroached upon and jaundice is present.

Next come digestive disturbances. The patient may suffer from gastrointestinal flatulence due to dragging on the duodenum and hepatic flexure of the colon by adhesions, and the accompanying interference with the digestive process. These symptoms may be associated with diarrhœa, constipation, or both alternately. One may be summoned to see a patient suffering from Dietl's crisis and, on examination, a displaced rotated kidney will be found, which is much enlarged and exquisitely tender to manipulation.

Hæmaturia is a more or less constant symptom, and is due to back pressure on the parenchyma of the kidney from an over-distended pelvis.

Frequent gushes of urine are frequently complained of by the patient. This is brought about by an over-distended kidney pelvis emptying itself at intervals. This is one of the most constant symptoms which I have found in kidney displacement. When the ureter becomes kinked from its abnormal situation, a greater or less degree of hydronephrosis is produced, and when from over-distention the kink is straightened out, a gush of urine occurs which is sufficient to attract the patient's attention.

The ureter, owing to its being fixed by the post-nephric fascia, at first does not prolapse with the kidney, but as the descent progresses it becomes loosened from its position, and the kidney, pushing the perirenal fascia before it, together with the lengthened artery and vein, forms a false meso-nephron. This meso-nephron may be long enough to permit of the widest excursions of the kidney throughout the abdomen.

Another important factor in producing pain is where the ureter is curved over an aberrant renal artery. In some of these cases a very slight rotation or displacement of the kidney produces a ureteral kink, with its accompanying pain. In this latter type, owing to the intermittent obstruction of the ureter, hydronephrosis is most often produced. A complete and persistent obstruction of the ureter will cause kidney atrophy.

In cases of rotated kidney where there is little or no displacement downwards, the patient complains of pain in the loin of a sharp, lancinating character. These cases are hard to discover, unless placed under the influence of an anæsthetic.

Fenwick,[4] by a series of radiographs, shows how pain and pathologic symptoms may be produced by a very slightly displaced kidney. When the gland has a downward displacement and outward rotation of the lower pole, no kink is produced in the ureter, hence we have no symptoms. This can be understood when we consider that in many cases of downward displacement of the kidney the ureter moves with it; therefore, there is no obstruction to kidney drainage, and no pain. Where, however, there is axial rotation, or downward displacement, with rotation of the lower pole inwards, there follows ureteral kinking, obstructed drainage with back pressure, producing pain and also hollowing of the gland.

Finally, in cases of movable or displaced kidney we have a large number of patients who suffer from pronounced nervous disturbances, sometimes bordering on melancholia. Whether these nervous symptoms are caused by the kidney condition, or *vice versa*, I am not prepared to say, but will leave that to the neurologists. All I can say in this regard is that it is perfectly wonderful how these symptoms will disappear in many cases and the patient gain in weight and strength after the gland is appropriately fixed in its normal position. Suckling has reported an enormous number of neurasthenic and mental cases, which he claims were due to misplaced kidneys, and which were cured after operative replacement of the organ.

Diagnosis. We must not conclude because we have discovered a displaced or movable kidney that all the symptoms of which the patient complains are due to this condition. It is only after most exhaustive examination and the careful exclusion of all other causes that operation is to be recommended.

The method which I have found to be most efficacious in making a diagnosis is to place the patient on a short, flat table, with the feet in stirrups, and the head well supported by a fair-sized pillow. In this position the abdominal muscles are well relaxed. With the right hand—in case of the right kidney—the abdomen is carefully palpated, especially up under and below the right costal arch. If the kidney is at fault, the patient will soon complain of a tender spot. Then the left hand should be placed behind the loin and an effort made to grasp the kidney between the two hands. If it is markedly displaced, it can be easily manipulated with the fingers, and its size fairly well estimated. If only partially displaced, the portion of the kidney below the last rib may be mapped out. Very frequently on rolling the organ between the fingers of the two hands it can be felt to slip back into place with a distinct jerk.

I now have the patient put her feet down and assume the sitting posture. Directing her to take a deep inspiration, the excursion of the kidney may be estimated. Then, still grasping and holding the kidney between the fingers, the patient is told to lie down again, when the kidney may be felt to move with great distinctness.

In case of the left side, this procedure is reversed.

The kidney may be all the more readily palpated if any degree of hydronephrosis is present.

An aberrant kidney must be differentiated from the following:

1. An empyema or hydrops of the gall-bladder.
2. Large-sized gall-stones.
3. An extra lobe of the liver (Riedel's lobe).
4. Solid or cystic tumours of the ovary.
5. An obstipation or malignant growth in the colon.
6. Appendicitis.

It is usually fairly easy to differentiate a kidney lesion from any of the above by the clinical history and careful palpation. The kidney may be replaced into its proper position; the others are usually fixed. An infected gall-bladder or supernumerary lobe is continuous with the liver dullness and cannot be pushed back.

By using Bastedo's method of inflating the colon with air, there is usually resonance in front of the kidney; in the others it is absent.

On examining the urine when the kidney is at fault, albumin, blood, and casts are frequently present; in the others absent. I had one patient, a woman, who had enormous gall-stones, forming a tumour, not only palpable but visible, and another patient, a man, in whom an exceptionally large gall-stone ulcerated its way from the gall-bladder into the hepatic flexure of the colon. In these two cases it was questionable at first whether the tumour was caused by the kidney or was in the bile passages. A minute, careful, bimanual examination soon cleared the matter up.

In another patient I operated for enlarged, displaced kidney, only to find that organ normal, while an anterior incision disclosed a dermoid of the left ovary, with a long pedicle.

In the cases where there is a long meso-nephron the patient will very often make a diagnosis herself. The kidney may be easily grasped, and its size and shape make the diagnosis unmistakable.

Occasionally a kidney will lie in the right iliac fossa, and unless care is taken it may be mistaken for appendicitis. I do not believe that a displaced kidney is ever the cause of appendicitis, but there is no reason why the two conditions may not be coincident.

Finally, in those cases of slight displacement or rotation of the kidney the method of Fenwick may be resorted to and a radiograph taken. He and others claim that the capsule of a displaced kidney is always thickened, and this causes a shadow to be outlined by the *x*-ray, showing the abnormal position of the gland.

In none of my cases have I met with an associated tuberculosis, pyonephrosis, or stone in the displaced kidney, but they have all been greatly enlarged and congested by interference with the blood supply.

Treatment. There are two ways open to the medical man to remedy this pathological condition: first, by prosthetic appliances, and, second, by surgical means. In thin women I have been able to apply a kidney pad, which will hold the kidney in place and relieve the symptoms. As soon as the wearing of this pad is discontinued, all the symptoms return. The great objection to the pad is that it is very uncomfortable to the patient, especially in the summer, and soon becomes burdensome. The most satisfactory treatment in this condition is purely surgical.

Short[5] reports thirty cases treated by the following methods:

	Cases	Cured	Comp. Relief	Little or no Relief	Death
1. Transcortical suturing....................	14	9	1	4	0
2. Fixation by capsule only..................	8	3	3	1	1
3. Pure carbolic acid and gauze sling..........	8	5	1	2	0

In the transcortical suturing the sutures were passed first through the capsule, which had been stripped off, and then through the kidney substance. Secondly, the capsule was stripped off and sutured on either side to the muscles of the incision. Thirdly, the capsule was swabbed over with pure carbolic acid, the kidney replaced and supported by a gauze sling. He points out that the greater proportion of successes resulted from the carbolic acid gauze sling method.

Rest in bed and the application of heat or cold, with the administration of sedatives, are only applicable in cases of Dietl's crisis. Massage and electricity are only mentioned to be condemned, as they are nothing but a waste of time.

My experience would indicate that the ingestion of highly nutritious foods, with the object of increasing the perirenal fat, is not to be depended on, as two of my cases which relapsed both gained twenty to thirty pounds in weight, and still the kidney did not stay in place.

I am not going to review all the surgical procedures recommended for the fixation of the kidney, but will merely call attention to two.

Billington, in the *Illinois Medical Journal*, reports a large number of successes by stripping off part of the fibrous capsule and hanging it over the twelfth rib, reënforcing it by catgut sutures through the kidney.

Carstens, of Detroit,[6] makes a vertical incision in the back at the junction of the erector spinæ and quadratus lumborum muscles, and after separating them incises the fibrous capsule by a Z-shaped incision, without delivering the kidney, and stitches the cut edges of the capsule to the edges of the muscles on either side with a continuous catgut suture. He reënforces this by a broad strip of adhesive plaster extending from one side of the body to the other, diagonally, after the incision has been closed.

I have had experience in operating on twenty-five cases. Of these I have reports on fifteen. In only three of these fifteen cases had the kidney again become displaced during a period ranging from five years up to the present. One peculiar feature of the relapsed cases is that none of the distressing symptoms, such as pain, flatulence, and indigestion, which existed prior to the operation, have recurred so far. My only explanation is that at the time of the operation the kinks of the ureter were straightened out, the adhesions broken up, and in the new descent the kidney has prolapsed in a different direction.

In this connexion I would like to report a case with peculiar features. When operating on a patient for prolapsed kidney I found a very dense band extending from the kidney downwards over the ascending colon. This is what Longyear terms the "nephrocolic ligament," but which I have not found to be constant. After replacing the kidney, I thought I could better support it below by stitching the severed adhesion to the lumbar muscles. Forty-eight hours after, to my consternation, I found the patient suffering from obstruction of the bowels, this adhesion in its new position evidently constricting the lumen of the large intestine. I immediately reopened the wound, cutting the sutures holding the band; the obstruction was relieved and the patient recovered.

In this series of twenty-five cases I have only found one in which the displacement was double, the other twenty-four being on the right side. This patient was suffering from profuse hæmaturia, which the replacement of the right kidney relieved.

My method of operating has consisted in opening the loin by an incision from the outer side of the erector spinæ muscle, beginning at the lower margin of the twelfth rib, and extending obliquely downwards and forwards above the crest of the ilium, as far as necessary. Through this incision the kidney is delivered, examined carefully for stone, hydronephrosis, or tuberculosis, the fibrous capsule incised along the convex border, the capsule peeled back on both sides and rolled up. Three sutures of No. 3 chromicized catgut are first put through the transversalis fascia and the muscles on the outer side, then through the capsule, the kidney cortex, the inner roll of capsule, and, lastly, through the muscles on the inner side of the incision. One suture is placed at the lower pole, the second through the middle of the kidney, and the third through the upper pole. The kidney is then replaced and pushed up into its natural position, taking care that its normal axis is restored, and the sutures drawn comfortably tight and tied. Next, Senn's method of placing gauze below the lower pole in the space formerly occupied by the displaced kidney is resorted to, the end being brought out of the wound for drainage. The incision is then closed by long, stout, silkworm-gut sutures, and a large, copious dressing applied.

References:—

1. Longyear, "Nephro-Coloptosis," 1910, p. 36.
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3. Fenwick. *Brit. Med. Jour.*, Vol. 1, 1911, p. 8.
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The need for more hospital accommodation is becoming more and more apparent in the western provinces of the Dominion. Saskatchewan, alone, a province with an area of two hundred and fifty-one thousand seven hundred square miles, received forty-four thousand immigrants last year. In this large area, with its scattered population of half a million people, there are about five hundred physicians, and there are eighteen hospitals which receive financial assistance from the government; these hospitals provide accommodation for six hundred and fifty patients.

A NEW REAGENT FOR DETECTING OCCULT BLOOD

By R. F. Ruttan, M.D., and R. H. M. Hardisty, M.D.

BOAS, in 1901, was the first to call attention to the importance of the chemical reactions for occult blood and their great help in the diagnosis of obscure conditions. Before that time, one relied on the microscope or the spectroscope, or on the making of hæmin crystals, all of which processes are infinitely less delicate and more difficult to carry out than the chemical tests. Nowadays the chemical testing for occult blood is a part of the routine examination in any case where stone in the kidney, duodenal ulcer, or malignant disease of the intestinal tract, is suspected. Benzidin, up to the present, has been easily the most satisfactory reagent for clinical work, but in ortho-tolidin we have a new reagent that is even more satisfactory on account of its greater delicacy, its more lasting colour, and the fact that it can be made into a solution that retains its delicacy unimpaired for three or four weeks. All this so simplifies the carrying out of the test that it might well take a place beside the familiar tests for albumin and sugar in the equipment of the busy practitioner.

The substance is Tolidin or orthotolidin—a crystalline basic body of the aromatic series with melting point 129-130°C., very slightly soluble in water, easily soluble in alcohol and æther and closely allied to toluidin and benzidin. The properties and derivatives of this base were first described by one of us in 1886.* It has never been used as a reagent for the detection of occult blood, for which purpose it is admirably adapted. It has been found to be an exceedingly delicate means of detecting the presence of blood in a watery solution, and has several important advantages over the other usual reagents when used in clinical work for the detection of blood in the excretions and secretions of the body.

To obtain some idea of its value as a clinical reagent it was tested against guaiacum, benzidin, and phenolphthalin, first of all with watery solutions of blood and then with blood in urine, fæces, and stomach contents. Its advantages in clinical use were then recognized, as it seemed to be less hindered in its action by the inhibitory substances in the body fluids than the other reagents.

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* "Proceedings of British Association, 1886"—R. F. Ruttan.

I might explain briefly these chemical reactions for occult blood. They depend on the so-called peroxidase activity of the blood, and to perform the test, some substance (leuco-body), such as guaiacum, benzidin, phenolphthalin and tolidin is used that becomes coloured when oxidized, and an oxidizing agent is also used (as ozonized æther, hydrogen peroxide, etc.). These substances are placed together in a test-tube (in solution); no change takes place; a little blood is added, when the characteristic colour of the oxidized substance employed appears immediately. This is due to the ability of the blood, by virtue of its so-called peroxidase activity, to seize upon the oxygen of the oxidizing agent, and to carry it over and deliver it to the chromogenic substance—so bringing about a characteristic colour reaction, i.e., a positive reaction. Many other substances, besides blood, may give this reaction; but, when properly performed and controlled, it can only be brought about by blood—or rather by the iron-containing blood pigment.

When examining the secretions and excretions of the body, we have to take many precautions. Many substances, such as pus, mucus, and various animal and vegetable ferments, which can give a positive reaction, have to be excluded. This is done by boiling; and, further, in the case of fæces, the hæmoglobin of a meat diet, which of course can give a positive reaction, has to be guarded against by dieting the patient with milk and vegetables for from thirty-six to sixty-five hours, depending on the presence or absence of diarrhœa. Or it is better still to "mark off" the stools by giving carmine. Another source of difficulty is that the secretions and excretions may contain substances that have a reducing action, that is, they are capable of seizing upon and appropriating the oxygen of the oxydizing substance, so that none is available to bring about the oxidizing of the reagent, and so a positive reaction.

In the carrying out of the tests, the reagents were made up in the following way: guaiacum was used in strength of 1-25 in methylated spirits; benzidin and tolidin in solutions of similar strength, but in glacial acetic acid. Pure phenolphthalin was prepared in the way recommended by Kastle (in *Bul.* 51 *of the Hyg. Dept. U.S.A.*). Considerable difficulty was experienced in making up this low reagent; extreme cleanliness had to be observed and the reagent had to be kept in a cool, dark place. Even then it lasted only some forty-eight hours in good condition.

A blood solution of known strength was used, made by taking one gm. of crystalline hæmoglobin and dissolving it in a litre of distilled water, making a solution of 1-1000, and from this solution all the other higher dilutions were made. Hydrogen peroxide was used as the oxidizing agent in all the tests, a chemically pure Merck preparation, Perhydrol, being diluted down to about a three per cent. solution—the strength of the ordinary commercial product. In testing, 1 c.c. of the reagent was used, and 1 c.c. of the substance to be tested, and, in all cases, 1 c.c. of hydrogen peroxide, except when the phenolphthalin solution was used which already contained it.

The relative delicacy of the different reagents for blood in a watery solution was first tested. It was found that guaiacum detected blood in dilutions of 1 to 50,000; benzidin, of 1 to 700,000; tolidin, of 1 to 7,000,000; phenolphthalin, of 1 to 10,000,000 and even more.

As an agent for detecting blood in watery solution phenolphthalin was found to be much the most delicate, in fact the test had to be carefully controlled to be sure the positive reaction was due to blood, for it was found that the ordinary distilled water of the laboratory gave a pinkish colour—positive reaction—due to some infinitestimal trace of iron or copper salt, and so all the distilled water had to be redistilled in glass before being used. Guaiacum and benzidin, when positive, give a prompt reaction which, however, depending on the dilution, does not last very long. With tolidin, the colour, a green to a blue black, depending on dilution, does not develop quite so rapidly, appearing more gradually and increasing in intensity, the colours lasting a much longer time, even several hours.

The delicacy of the different reagents in detecting blood in urine, fæces, and stomach contents was then compared.

Blood in Urine. The 1 to 1,000 watery solution of blood, which was used before, was diluted with an equal quantity of normal (negative) urine, making a blood solution of 1 to 2,000. For the higher dilutions normal urine was added to this 1 to 2,000 solution. In this way it was found that blood in urine was detected by guaiacum and benzidin in dilutions of 1 to 6,000, the reaction of benzidin being very slightly the more marked, but still only slight and lasting only a very few minutes, while tolidin detected it in a dilution of 1 to 24,000, giving with this dilution a deep greenish-blue colour that lasted half an hour or more. Phenolphthalin, however, failed to give a positive reaction when a solution of blood in urine of 1 to 2,000 was added.

Fæces. For the detection of blood in fæces, the stool of a patient who had been on a meat-free diet for ten days, was used. This stool was dried and a two per cent. emulsion of it made, boiled, and one c.c. added to the different reagents, after which one c.c. of blood in watery solution was added to this mixture. The emulsion gave alone a negative reaction with all reagents, while the stool of a healthy person on full meat diet gave a strongly positive reaction even after being boiled. Testing in this way it was found that guaiacum could detect blood in dilutions of 1 to 10,000; benzidin and tolidin, of 1 to 100,000; while phenolphthalin again proved to be a very poor clinical reagent, detecting only dilutions of 1 to 2,000, and this only when additional hydrogen peroxide was added to the Kastle's reagent.

STOMACH CONTENTS. When testing for blood in stomach contents, the material withdrawn from the stomach after an ordinary test meal was used. This had a total acidity of 74, free HCl 45, and contained no lactic acid. One c.c. of this material was added to each reagent before the blood in watery solution was added. Here phenolphthalin proved to be of no value, as it is necessary for it to be in an alkaline solution and even with additional alkali it was less delicate than guaiacum. Guaiacum just detected blood in dilutions of 1 to 5,000; benzidin and tolidin in dilutions of 1 to 30,000.

To sum up, we have in orthotolidin a reagent of very great delicacy for detecting blood in watery solution, and, in addition to this, it is superior to the reagents in general use for clinical work. It is greatly superior to all the reagents for detecting blood in urine, and while benzidin, which is easily the best of the well-known reagents for clinical work, is quoted here as being equal to tolidin for the detection of blood in fæces and stomach contents, this is true only for freshly prepared solutions of benzidin, older solutions losing fifty per cent. of their delicacy in twenty-four hours, whereas tolidin will remain unchanged for from three to four weeks, an important fact, adding to the ease with which the test can be carried out. Another point in favour of tolidin is that when the blood is in small quantity, the reaction increases gradually in intensity and persists longer than with the other reagents, so being more easily read. There are, of course, many ways of increasing the delicacy of the reactions for occult blood when testing urine and fæces—such as treating with acetic acid and filtering or extracting with alcohol, æther, etc., but all these things tend to make the reaction longer and more complicated, and, where alcohol and æther are used, more expensive, so that it is a great advantage to get a reliable, delicate reagent that we can apply directly to the fluid to be tested.

FACTORS FREQUENTLY OVERLOOKED IN THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS

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IT may be said that surely nothing more of interest can be written upon the old subject, the early diagnosis of tuberculosis. Of such relative importance, however, do we who work in tuberculosis still hold this phase of the problem, that I desire to present the situation as it is seen from a hospital, where we admit between three and four hundred consumptives every year. Sufficient reason for selecting this subject might be found in the report made by Kendall last year, that of one hundred consecutive cases sent to the Muskoka Free Hospital in the early months of 1911, and classified as incipient by their own physicians, twenty-nine were incipient, while seventy-one were advanced, and of the latter, nine were far advanced. It appears, therefore, that certain points are insufficiently recognized in the early diagnosis of this disease. The chief of these we shall discuss in some detail with examples of individual cases.

Far too many cases are still diagnosed late. There is no necessity for early cases of pulmonary tuberculosis to go through the hands of one practitioner after another, to be finally diagnosed by a third or fourth who takes sufficient time and care to go thoroughly into the history and examination. Too often are we told by patients at the Muskoka Hospital that they had sought the advice of several doctors in succession, before the real trouble was discovered. One patient (Case No. 2088) reported to a certain physician complaining of cough and malaise. The physician prescribed a cough mixture and tonic, but failed to examine the chest. Next month the patient reported to a second physician who diagnosed tuberculosis, telling her she had had it for years. She then came to the hospital and we classified her as advanced, as the second physician had indicated. Is the procedure of the

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first physician, who did not examine his case, better or worse than that of attempting to examine the chest through the shirt? This we still hear of occasionally. The public is learning to expect thoroughness in the physician, as it has already learned to demand cleanliness in the surgeon.

I may as well make a broad statement at once, and one the significance of which is appreciated by far too few practising physicians to-day. It is not to be expected that pulmonary tuberculosis can be diagnosed in the early stages by any one simple procedure, such as the microscopic examination of the sputum, or the cursory placing of the stethoscope on the chest. The chief fact, so often overlooked, is that no one sign or symptom is necessarily present.

Frequently the first factor sought is the presence of tubercle bacilli in the sputum. I believe there are those in the profession who would be farther ahead in the clinical diagnosis of this disease if we had not this cut and dried method to rely upon. These laboratory methods tend strongly to dull our wits and our senses, when they so frequently replace careful clinical investigation. The words of R. W. Phillip[1] three years ago were very plain: "If the physician waits for the appearance of the tubercle bacillus in the discharge, he waits too long. Its occurrence in the expectoration signifies a tuberculous invasion which has made considerable advance. The disease has progressed far before it takes the form of a discharging lesion. The physician's duty is to make the diagnosis prior to this." We are unable to find tubercle bacilli in the expectoration in from twenty to thirty per cent. of our cases, and these are mostly placed in wards by themselves. In this group there are always several who are in the advanced stage, and some with cavity formation.

While it may be said that a few are too ready to rely upon this laboratory method, it is also true that many use it too little, or are content with one or two negative examinations. The records of provincial laboratories show that the large majority of specimens are sent in by a comparatively small number of physicians. We have demonstrated numerous tubercle bacilli in cases where the physical signs were quite indefinite, indeed the finding of the bacilli occasionally comes as a surprise. In one instance, a patient (No. 1614) had diagnosed his own case before he went to a physician by getting his brother to examine the expectoration in the laboratory of a physician's supply house. Again, a physician who came to one of our institutions as a patient (No. 1995) with fever and malaise, had numerous bacilli in his expectoration although the chest signs were nil.

The second factor which is usually considered necessary for a diagnosis of tuberculosis is the classical symptom, cough, whereas this may not be present in early phthisis, nor indeed is it always present in the advanced stages. One of our patients (No. 2138) who had nursed her mother through tuberculosis, was advised by her physician to report the first occurrence of a cough. One year later when she complained to him of fatigue in the forenoon, he prescribed a tonic, and she was soon again able to do a full day's work without fatigue. Six months after this the patient reported a cough, and she was then sent to the sanatorium for treatment. There was active disease from apex to base of the left lung, and because of this she was classified as an advanced case. The physician waited for the cough.

There are always some patients at the sanatorium without cough. When a diagnosis is reached before this symptom has developed, the spitting of blood, fatigue, or pains in the chest are the usual symptoms which bring the patient to his physician. A nurse at the sanatorium, who is an apparent cure, came to us as a patient (No. 1456) in 1910 with symptoms of pain in the chest and langour. These were the symptoms reported to her physician. The disease was classified as Stage 1 (Turban), and there was occasional slight fever. There was no cough or expectoration.

Some writers claim that cough is not an early symptom of phthisis. Because large amounts of sputum are often tolerated over night by the lungs in tuberculous patients without coughing, and because a laryngitis is usually present in the early stages, Aufrecht[2] argues that the early cough in this disease is laryngeal rather than pulmonary.

The third factor which is usually expected when one is looking for tuberculosis is fatigue, and yet this also may be absent in early disease. Another patient (No. 1913) reported to his physician the spitting of blood in the morning for months. He complained of no fatigue. His physician found that there was slight fever daily. He came to us with vague chest signs. Laboratory tests were corroborative of disease.

On the other hand, we have seen that no single symptom is requisite for the presence of tuberculosis, yet, on the other hand, a diagnosis may be made, tentative or positive, largely upon the presence of one or two certain symptoms. Because of this, the patient should be closely questioned regarding each of some score of symptoms, and in a carefully taken history due attention should be given to the chronological order of events. Indeed, in dealing with a disease so insidious in its onset and so indefinite in its manifestations, the physician might well take the precaution to place his case before him in writing. By so doing he is more apt to exact definite answers from his patient in regard to both history and symptoms, and then it is often surprising how clearly the path of the slowly developing disease is recognized, and how much earlier the thread of its course can be picked up. It appears that patients are frequently not closely questioned in regard to the various symptoms, else so many cases would not be overlooked till even the patient himself feels sure of the diagnosis. Hardly a week passes at Gravenhurst without the arrival of some stranger asking that he be examined for tuberculosis. He may be convinced in his own mind that he has the disease and may assert that his own physician either could not find it or denied him the truth. Other patients, after they have been in residence for a few weeks and have learned to appreciate the insidiousness of the onset, will sometimes volunteer the statement that their physicians never questioned them in regard to certain symptoms, such, for instance, as blood spitting. One of our women patients recently stated that she believes that she has had tuberculosis since July, 1906. She says she came to this conclusion herself after coming here and learning that one could be so slightly ill and still have the disease. Her case was diagnosed in June, 1911, and the symptoms, as given in her history, indicate a period longer in duration than she herself suspects, probably from 1894 when she first came under the care of physicians.

In regard to the importance of careful inquiry for each and every symptom, let us consider a few of the symptoms individually. The one symptom that may with few exceptions be considered diagnostic is pulmonary hæmorrhage. This often occurs where there is no cough, and, indeed. scores of our cases give histories of blood spitting months and years before tuberculosis was suspected. The subsequent course frequently indicates that the hæmoptysis was due to an active tuberculous focus, and yet the patient is often temporarily satisfied by the physician's assurance that the blood has come from the throat. When blood comes up in the throat in small or large amount, especially if followed by blood-streaked sputum for a short period, we should not often go astray if we consider the case tuberculous until other cause is shown. A man of twenty-nine (No. 2013) consulted his physician for malaise, chilliness, feverishness, night-sweats, slight cough, and a little bloody sputum. Two months previously there was an hæmoptysis of two ounces, while a year earlier he had been so frequently tired that he had changed from indoor to outdoor work. The physician, however, treated the case for ten months before he diagnosed tuberculosis, and the application form for admission of his patient showed that he had not elicited the history of the first hæmorrhage, which should have told him to treat his case as tuberculosis, even without the very definite combination of symptoms for which he was called.

A slight daily rise in temperature or an increase in the temperature range from the one degree in the normal, to the usual two degrees and more in the tuberculous, will in most cases help to make a diagnosis where tuberculosis is suspected; of course certain other causes of slight rise in temperature must be carefully excluded. A reliable temperature record cannot be obtained at the occasional visit to the physician's office, but must usually be made by the patient himself or a member of the household. Careful instruction about the details of temperature taking should be given and the temperature should be recorded four or six times daily over a period of at least a week. Exercise to produce auto-inoculation and a rise of temperature is sometimes a valuable test. Burton-Fanning[3] says that where there may be a rise of a fraction of a degree in the rectal temperature after exercise lasting only fifteen minutes in the normal, there is a greater rise lasting thirty minutes in the tuberculous. In the latter case it would depend on the amount of disease and the degree of immunization already attained. This, like several others of the finer diagnostic points, requires observation over a period of time and exemplifies the fallacy of depending upon a single interview in doubtful cases.

A persistently increased pulse rate, or irritable condition of pulse, otherwise unaccounted for, may be an important factor in making the diagnosis. If the normal pulse rate for the individual is known, this observation becomes of increased value.

If we obtain the history of an ischio-rectal abscess, swollen cervical glands, pleurisies, or hip disease, etc., our suspicion is further strengthened.

A symptom which should always cause suspicion is persistent hoarseness or aphonia. A girl of twenty-three (No. 2063) reported to her physician at Christmas complaining of loss of voice. She was given a prescription without any examination of throat or chest. The prescription was repeated once by the physician and the patient was then told that further medication would be of no avail, but that her voice would return in the spring. Not being satisfied, the patient reported to another physician who immediately examined both throat and chest and requested a specimen of the expectoration. There was no cough and only occasional phlegm, so that the specimen was obtained with difficulty. Upon microscopic examination tubercle bacilli were found, and the patient came to the hospital for treatment. Both vocal chords were thickened and there was infiltration of the interarytenoid space. Both lungs were so affected as to be classified as Stage 3 (Turban).

Possible direct exposure is, indeed, a question to be considered, and the fact of such exposure is of much greater value than the mere knowledge of a previous case in the family. The history that the patient has been boarding with careless tuberculous individuals, or working at the same desk or bench with them, certainly indicates direct exposure, and is of sufficient value to be reckoned among the diagnostic points. The knowledge which the patient may have obtained of previous consumptives having occupied his house or room, if definite, is also extremely suggestive.

That everyday complaint, fatigue, might well be weighed and balanced against existing conditions in a patient's life and work, more frequently than is done, instead of prescribing tonics as a routine, as in the case already mentioned.

The cough, or the slight raising of phlegm, that is usually described as taking place "only in the mornings," is suggestive, and always warrants investigation. When we recall the use of the ciliated epithelium of the trachea and bronchi, we can appreciate how phlegm may be raised without cough and expectorated by a mere clearing of the throat. It is a very common point in the history of the onset of pulmonary phthisis that clearing of the throat has occurred in the mornings for months.

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In dealing with the points most frequently overlooked in the study of a case of possible tuberculosis, we have considered the history and clinical symptoms before the physical signs, for two reasons. First, although a patient may report a definite combination of symptoms of tuberculosis, the physician too often waits for the appearance of very definite physical signs. Secondly, it appears that a true appreciation of the relative values and significance of the various chest signs is not obtained either in our college courses or in general practice. Therefore, the practitioner may more safely reach an early diagnosis from a carefully taken history, with full weight given to apparently trifling symptoms, than by the results of his examination at a time when physical signs may be both indefinite and misleading.

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We may now turn to the consideration of chest signs. As was said of symptoms, no one is necessarily present. Perhaps the sign most frequently sought when looking for tuberculosis is that of râles, and yet in the early stages these may be very difficult or impossible to detect. Even in the moderately advanced stages, râles are sometimes difficult to hear. When this sign is absent or concealed in any individual case, points for consideration are, whether or not it may be due to the type of breathing, the character of the secretion, the site of the lesion, pleural thickening, or the thickness of the chest wall. The fact remains that in a very fair proportion of early cases, râles cannot be detected by the technique in general use, while in a smaller proportion of cases, râles cannot be elicited by any known method. Indeed, auscultation will also, occasionally, reveal nothing abnormal in the character of the breath sounds.

The second sign which is often sought in vain, is an abnormal percussion note. I think of the two methods of physical examination, auscultation and percussion, the latter is frequently more difficult. It may be that the normal resonance of the individual chest is sometimes more difficult to gauge than the normal vesicular murmur. It does appear that one is more often at sea in attempting to classify or value the exact results of percussion than those of auscultation. There may also be definite and moderately advanced pulmonary tuberculosis without any demonstrable abnormality in the percussion note, depending on the site and type of the lesion or the presence of compensatory emphysema. Deformity of the chest wall independent of the lungs may also materially modify the percussion note.

Inspection of the chest for possible retraction, deformity, or emaciation, may reveal no visible sign of disease in early or even moderately advanced phthisis.

Against the statement that in certain early cases neither auscultation, percussion, nor inspection may reveal definite signs of disease, we must place the claim that any one of these three methods of examination, provided that careful technique is employed, may in other obscure cases demonstrate such abnormal variation that it becomes the deciding factor in the diagnosis. First, consider again the elicitation of those "sounds which are produced within the lung by respiration, and which are wholly additional to the natural or morbid breath sound," namely, râles. These adventitious sounds, more especially when persistent and heard in the apices or upper parts of the lung, are so often diagnostic that we may well take time to consider special points in the technique of examination for them.

The auscultation of the chest for râles requires much greater care and precision in routine than is usually given to this part of the chest examination. After auscultation during normal breathing, the patient is requested to breathe deeply, but not too forcibly. The object is to procure sufficiently full respiratory excursions that all intrapulmonary adventitous sounds may be brought out, without the possibility of fine crepitant râles being obscured by too forceful an effort. I have found that the average rate most satisfactory in auscultation for râles is ten to twelve respiratory excursions to the minute. If good full respirations are not taken when first requested, it is our custom to proceed at once to direct, in a whisper, each inspiration and expiration. It is frequently found that the patient does not comprehend what is meant by taking a deep breath,—extra inspiratory effort. It is more often found that he does not appreciate extra expiratory effort, that is, the expelling of more residual air, and this, I believe, is as important as the former. After finding no râles during ordinary deep inspirations, one can sometimes elicit them over a whole lobe by exacting an extra respiratory effort prior to each deep breath. This is why the cough is so often of value. It is to the same purpose. If a long expiration is accelerated, the result at the end is a cough. A cough at the proper time serves the same purpose, then, as an extra expiratory effort, and as such will frequently bring out râles which would otherwise go undetected. A chest examination without having the patient cough and then breathe deeply, can hardly be called complete.

In the auscultation for slight variations in the breath sounds, we are likely to note the earliest changes produced by disease. It appears that the stage preceding that of râles can sometimes be detected by slight changes in the respiratory murmur, more especially in the detection of a granular, impure, or slightly roughened inspiration. This type of breath change can be most easily appreciated by close comparisons between the auscultated breath sounds in the normal, and again in the chest with the first appearance of râles. This is a stage between the two. Feeble breathing is said by some to precede granular breathing. I have not been able to demonstrate this so frequently, and have relied rather upon the granular type as the earliest change.

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The percussion change as a diagnostic factor may not be evident as early as auscultatory change, but it usually follows very closely, and its detection is more or less corroborative. It may, in fact, be noticed before any other physical sign, if for no other reasons than that the ear may be quicker to note it, and that the sensation of touch also comes into play. Impairment of resonance may sometimes be the most marked physical sign, indeed occasionally it is the only one demonstrable. If from the symptoms one strongly suspects tuberculosis, slight impairment of resonance in an apex may be corroborative. Slight hyper-resonance is frequently found in an area adjoining the suspected part, or on the opposite side. Light percussion has been advocated by many authorities as giving the best results, and this, I believe, is not given a fair trial by most physicians. We overlook the fact that the lighter the stroke the more accurate are the findings for the exact area examined. In certain areas of the chest, I often find the simple tapping with one finger the most satisfactory method of percussion. In this it seems easier to obtain a light stroke, and the area examined is more limited than when a pleximeter is used. It is often found on percussion or palpation of the chest that certain areas give pressure pain where there is pathological change in the lung or pleura. Francke found this symptom present in eighty-one per cent. of early cases.

No one thing is more important in early cases than inspection. The careful inspection of the chest, having the patient sit straight in front of the examiner, with shoulders well back, and hands by the side, will in many early cases show a unilateral apical retraction which fits well into a chain of diagnostic points. Where retraction in the apices is bilateral, it is not so diagnostic, and yet bilateral disease may thus be easily overlooked. The limited expansion of apex or base, or any one part, noted on inspection alone or aided by palpation, will often locate the lesion at once. Of course, changes in the contour of the chest, as in the percussion note, may indicate past as well as recent disease, and for this reason are secondary to the finding of adventitious sounds on auscultation.

A concrete example of an early diagnosis, depending on a few of the factors enumerated above, might be of interest here. A young woman came to the hospital last year on a visit, and incidentally asked for an examination, declaring at the same time, that she had no symptoms. The examining physician on inspection noted slight right apical retraction, and on auscultation over the same area, an inspiratory murmur slightly roughened, usually called granular or impure breathing. These were the only signs.

The examiner was about to postpone a definite opinion until a later visit to the hospital, but proceeded to ask the patient concerning particular symptoms. On close questioning it was found that she had spit phlegm streaked with blood two months previously, and there was some fatigue at the same time, but this was attributed to the hot weather. The patient had reported these two slight symptoms to her physician, who had prescribed tonics and rest. This bit of history, elicited with difficulty, decided the case for the examiner, and the patient came into residence next week for treatment (No. 1976). Later examinations by other physicians and laboratory tests, proved the presence of clinical tuberculosis. This patient had never coughed, had lost no weight, and claimed to feel quite well at the time of examination.

We have seen that not infrequently pulmonary tuberculosis may be present in an incipient or moderately advanced stage, and yet the physical signs may be so concealed that they may be difficult or even impossible to detect. I consider this type of case to be the most deceptive to the practitioner. So often have we had the opportunity of examining and observing cases soon after diagnosis, and of comparing our results made under the favourable advantages of a hospital, with the findings of their physicians recorded on the application forms, that we conclude such a type is not generally recognized. It would seem advisable then to refer to cases of this type as a definite class of obscure tuberculosis. This type has been recently described by Neuman.[4] Many examples of the type with secretly written (cryptographic) signs could be cited from our charts; they would but exemplify and bear out what has been claimed in paragraphs above, namely, that physical signs are not necessarily present, and that in doubtful cases we are warranted in depending for diagnosis more upon symptoms than chest signs.

We are quite aware that it is said of us who have worked in tuberculosis wholly, that we find it "whether or no." It must be stated emphatically, however, that those of us who train specially in this disease, get safely over any anxiety to make a positive diagnosis of tuberculosis before we have been studying the disease many months. We have, on rare occasions, I admit, declared no definite evidence of clinical tuberculosis in patients referred to us for investigation, and have sent them back to their physicians.

Finally, we must not overlook the hypothesis of universal infection which is now generally accepted by scientific observers. This phase of the problem has been reviewed recently by Caulfeild,[5] and also by Parfitt.[6] Admitting that all adults have received at some time an inoculation of tubercle, it is not surprising that in our initial chest examination at the Muskoka Hospital we frequently locate the site of a primary infection aside from that of the active lesion. The active lesion is thus, usually, the result of a subsequent infection or of an auto-reinfection. In fact, in going over clinical normals, we cannot often declare an absolutely clear chest. The diagnosis required in practice is, of course, the presence or absence of clinical tuberculosis, and whether or not special treatment is required.

The attempt in this paper has been to bring to greater notice the factors for the early diagnosis of pulmonary tuberculosis most frequently overlooked, and to present a clearer picture of this most variegated symptom-complex in its incipiency. I also hope that I have made plain the cardinal rule, that no one sign or symptom is requisite to the presence of phthisis, and that "a diagnosis of pulmonary tuberculosis from one single physical sign," or indeed from one single symptom, "should never be made" (Price).[7]

The responsibility of recognizing tuberculosis in its incipiency must always rest with the general practitioner, and the facilities at his hand for thorough supervision of his cases can seldom be compared to those of a hospital or dispensary. Let us hope that the dispensary for investigation of suspected cases, and the closer study of clinical pulmonary tuberculosis, will soon be available for the many rather than for the few.

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A FURTHER CONTRIBUTION TO THE STUDY OF SCOLIOSIS

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Montreal

IN studying those forms of scoliosis in which the affection is a bone and not a muscle problem, above all things it is necessary to have a clear conception of the pathology of scoliosis and to accept the statement, as already proved, that there are two distinct forms of scoliosis. First, there is postural or physiological scoliosis; second, there is organic scoliosis. The first may, in all cases, be a precursor to the second. This is open to question.

1. Postural or Physiological Scoliosis. This, whilst simulating pathological scoliosis, is dependent upon attitude. It results from the assumption of certain attitudes, but when the model is released from these attitudes the physiological scoliosis disappears.

2. Pathological Scoliosis. This seems to be an exaggeration of physiological scoliosis. In it the formation of the corporal parieties is organically changed. Here we have fixed deformities, which are not directly due to attitude.

Pathology. The deformities are of the trunk, and especially of the thorax. All the component parts of the thoracic parieties enter into the deformity as a whole, but the characters of the deformities of each lateral thoracic wall are diametrically opposed to one another.

The deformities of scoliosis include a lateral deviation of the spine. This is but one of a series of deformities. It is questionable whether it is not a secondary deformity and unlikely to be of as great importance as the deformity of the rib walls already mentioned.

Scoliosis, then, is not a deformity of the spine alone, as it seems to have been so frequently considered. It is a deformity of the trunk as a whole, but especially of the thorax.

Deformities of the Thorax. In the graver forms there is a

Read at the Montreal Medico-Chirurgical Society, November 1st, 1912.

posterior prominence and a lateral descent of the ribs. This is usually of the right ribs. The rib wall seems to have been crushed in towards the spinal column. It is flattened. The posterior convexity is sharp and razor-like. On the opposite side the ribs are deep and hollow behind, but, as a rule, prominent in front.

DEFORMITIES OF THE SPINAL COLUMN. The spinal column is curved usually in the dorsal region. The curve is convex towards the side on which the ribs are prominent. (In this, organic scoliosis differs, at least apparently, from a postural or physiological scoliosis, where the curve is concave towards the side on which the ribs are prominent.) There are compensatory curves, usually in the cervical and lumbar regions—perhaps also in the dorsal region. These compensatory curves are in obedience only to the laws of gravity.

CONSIDERATION OF THE DEFORMITY IN RELATION TO TREATMENT. The two sides of the thoracic wall in this affection are deformed. There is a flattening on one side posteriorly. There is a bulging on the other side anteriorly. The rational treatment will aim at reversing this. When this is done the law of Wolff[1] must be depended upon to confirm the correction. To be more lucid: If it were possible to change the two sides of the deformed thorax, the one for the other, we would have what might be called scoliosis on the converse side. It is impossible to change the two thoracic walls the one for the other, but it is possible to obtain scoliosis on the converse side. This is done by obtaining, by posture, physiological scoliosis on the reverse side to that of the greatest apparent deformity.

TREATMENT. Scoliosis on the side converse to the greatest deformity is what is aimed at. This may be obtained by posture. It may be obtained by either lateralization or rotation (Fig. 1 and 2). Perhaps it may be obtained by either equally well. The physiological scoliosis so obtained may be maintained by the use of a plaster of Paris jacket. Because this physiological scoliosis places the thorax in the position farthest removed from the position of deformity, it is the position to be preferred in the treatment of organic scoliosis.

Physiological scoliosis induced by rotation is easier borne by the patient than is that induced by lateralization. It is a position borne without pain. It is an attitude which is not unsightly, and it may be unconsciously compensated for by the patient.

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[1] **WOLFF'S LAW.** Professor Julius Wolff, of Berlin, annunciated the following law, which has since borne his name. "Every change in the form and function of the bones, or of their function alone, is followed by certain definite changes in their internal architecture, and equally definite secondary alteration of their external formation in accordance with mathematical laws."

The plaster of Paris jacket applied to maintain the correction in this form of treatment is fenestrated to encourage growth in those parts of the chest wall which are flattened. This makes it reasonably light. It is applied in two parts. First, a pelvic girdle is made and allowed to harden. On this as a foundation, but only after the thorax has been rotated on the pelvis, the second or upper part is applied by means of the apparatus already suggested by the writer[1] and to be more fully described by his associate, Mr. H. E. MacDermot, in the *Journal of the American Orthopædic Association.* Plaster jackets so applied efficiently maintain correction. After they have been employed for a reasonable time, gymnastic exercises may be employed to confirm the correction maintained in them. During their employment breathing exercises may be used to expand the contracted parieties.

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[1] *New York Medical Journal,* July 6th, 1912.

MEDICAL EXPLANATION OF AN APOCRYPHAL MIRACLE. An editorial in the issue of the *Lancet* for March 9th calls attention to a case, recently reported in a Danish medical journal, of a man, blind in one eye from cataract, whose sight was suddenly restored one day after he had rubbed the eye vigorously on account of some sweat that had run into it. Examination showed that he had dislocated the cataractous lens, which had dropped to the bottom of the eye, where it lay floating in the vitreous. It is suggested that a similar occurrence may have occurred in the miraculous cure of Tobit's blindness, as recounted in the Apocrypha. By direction of an angel, Tobias, his son, took the gall of a fish and "strake of the gall on his father's eyes. And when his eyes began to smart, he rubbed them; and the whiteness pulled away from the corners of his eyes: and when he saw his son, he fell upon his neck and wept." It had been suggested by Professor Greef, in commenting on Rembrandt's famous painting of this scene, that Tobit's affection was bilateral pterygium.

Boston Medical and Surgical Journal, March 28th, 1912.

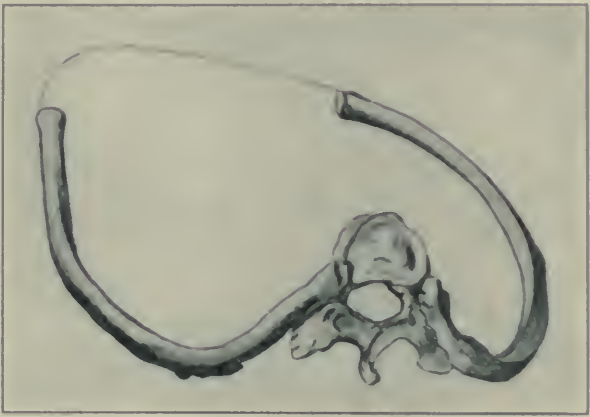

FIG. 1.—From Feiss. Demonstrates the deformity of scoliosis.

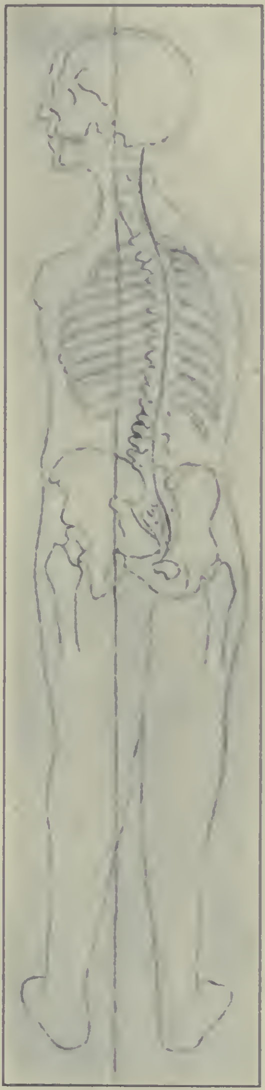

FIG. 2.—From Feiss. Demonstrates the position of the thoracic parietes in rotation. It demonstrates the similarity of the parietes in either rotation or lateralization, and, lastly, the similarity between physiological and pathological scoliosis.

Editorial

MEDICINE IN IRELAND

AMONGST the many beneficent results arising from the celebration of the two hundredth anniversary of the foundation of the Trinity College Medical School at Dublin, is a book by Dr. Kirkpatrick, entitled, "History of the Medical Teaching in Trinity College, Dublin, and of the School of Physics in Ireland." The record of these two hundred years is really a history of medicine, not only in Ireland, but in the world at large. But especial interest attaches to the book inasmuch as it gives, by way of introduction, a most succinct account of the history of early medicine in Ireland. It appears that the Irish, like the Greeks, had their medical deity, who, in this case, was known as Diancecht, or the possessor of "the eminent power," and a date as early as 1272 B.C. is assigned to him. The next medical hero of note was "Eaba" the female physician. Shortly before the opening of the Christian era, there is a record of the activities of Fingen which is contained in the "Book of Leinster," and is still to be seen in the library of Trinity College. Fingen appears to have practised a conservative surgery. By the fumes which arose from a house, the number of patients therein and every disease that prevailed, was known to him. The king was wounded in the head by a stone missile, but the surgeon declined to remove the foreign body. He left it *in situ* and stitched up the wound. The patient survived for seven years, and he was recommended not to allow his anger to come upon him, that he should not go upon a horse, and that he should not run. There is a well defined tradition that the ninth king of Scotland was sent by his parents to Ireland to be educated amongst the physicians there.

Nor were the Irish left without a well defined code of medical jurisprudence. In the "Senchus Mor" the rules are clearly set forth under which a patient might recover damages from a physician for "bad curing," and there is a distinction between lawful and unlawful physicians. This precaution against malpraxis was common to all ancient jurisprudence; indeed, the Babylonian code of Hammurabi, which dates back to 2200 B.C., lays down the rule that "if a physician has treated a patient for severe wound with a lancet of bronze, and has caused him to die, or has opened an abscess of the eye, and caused loss of sight, he shall have both his hands cut off."

In Ireland if one person wounded another the aggressor had to pay a fine to his victim and provide him with sick maintenance and medical care; even the accommodation exacted was clearly specified. The patient must have a room with four doors in it, and water must run across the middle of the floor. Precautions were to be taken that a sick man "should not be injured by women or dogs;" that "fools and female scolds" should not be allowed near him; and that he should not be injured by forbidden food. Physicians were compelled to build their houses over a running stream, and in time the house of a physician came to be regarded as a hospital.

Amongst the Irish, as amongst the Greeks, the medical calling was hereditary, and this practice has prevailed until comparatively recent times. Some of these medical families were the O'Callenans, of Desmond; the O'Cassidys, the O'Lees, and the O'Hickeys. Indeed, it is on record that Nicholas Hykie was the medical health officer of Dublin in the year 1590. His scale of fees was prescribed and he was expected to remain within the precincts of the city.

It does not appear from Dr. Kirkpatrick's researches how these old physicians acquired a knowledge of their profession, but probably it was done by a system of apprenticeship. There is evidence, however, that many Irishmen studied abroad, and in the Middle Ages medicine was often studied in the monasteries as part of a liberal education. Manuscripts are yet in existence containing translations of the writings of the Arabian physicians, of Hippocrates, Aristotle, and Gallean, which would seem to indicate that the Irish physicians were conversant with the best medical knowledge then current in Europe.

HEALTH AND EDUCATION

THE first open-air school held under the auspices of the Toronto Health Department closed its three months' session on September 14th last. The experiment has proved in every way a success, and in one family alone five cases of tuberculosis were arrested, and possibly prevented altogether. In his account of the session, Dr. Struthers, the chief medical inspector for Toronto, stated that the average child, during the first week, gained from one-half to four and one-half pounds. And not only did the children show great physical improvement, but their mental faculties were awakened, and the dull and listless air gave place to an eager desire to learn and an intelligent interest in their surroundings.

The open-air school has been in vogue in the United States for some time, the first school having been established in 1908 in Providence, R.I. The results have been so satisfactory that over thirty schools since then have been inaugurated, and Canada cannot do better than follow the example. There are many children who are not physically strong enough to attend the ordinary schools and to keep pace with their companions: the problem is what should be done with these children. If they are excused from attendance at school there is nowhere for them to go; and, in all probability, their homes are the worst places for them. The open-air school seems to be the solution. The movement has been commenced in Toronto and in Hamilton, and, one feels confident, will very soon bear fruit in other parts of the Dominion.

The Royal Edward Institute has already decided to establish an open-air school for tubercular children at Montreal, and an executive committee has been named consisting of Dr. Roddick, Dr. Guerin, and Mr. Farquhar Robertson. At present there are eighty-six children attending the institute, and it is proposed to select twenty-five of these children to form an open-air class in the hope of effecting a permanent cure for each individual child.

The children of to-day are the citizens of to-morrow, and their proper development is a matter of national concern. Many need help to overcome their physical imperfections, and many more require assistance in their mental development. It is, unfortunately, only too probable that children whose mental defects are pathological can achieve little or no improvement, and these should be provided for in institutions and separated from their normal companions. But there are many children who are defective in mental capacity who, with judicious treatment, can be educated to earn their own living and who, otherwise, would grow up to be a burden on the state. At the meeting of the Canadian Public Health Association in Toronto, Sir George Newman, the chief medical inspector of schools in Great Britain, stated that it has been found by experience that forty-five per cent. of the children of feeble-mind can be educated to earn part or all of their own living. When one remembers that there are six thousand feeble-minded persons in Ontario alone, the mental development of the child becomes a serious question.

THE MEDICAL INSPECTION OF IMMIGRANTS

IF in the years to come Canada is to hold its own among the nations, it must neglect no opportunity by which the health of the coming generations may be secured. Not only must measures be enforced to conserve the health of citizens and to prevent the spread of disease, but more attention must be paid to those coming to this country, and none should be allowed to enter the Dominion save those who are physically fit to become good and useful citizens.

Although a systematic medical inspection of immigrants has been conducted at all Canadian ports for the past nine years, the hospital records still show a very large proportion of immigrant patients. While the capable, self-supporting immigrant is an asset and should be encouraged to come to Canada, the undesirable immigrant merely constitutes an increased expenditure and an addition to that dependent class of citizen which should have no place in a new—or indeed in any—country. During the past nine years, four thousand six hundred and sixty-seven immigrants have been deported from Canada. The principal causes of deportation have been: general debility and public charge, that is, persons unable to support themselves and liable to become a charge on the community, two thousand three hundred and forty-one; vagrancy and criminality, six hundred and seventy-six; mental weakness or insanity, six hundred and thirty-seven; and tuberculosis, one hundred and sixty-nine. During the year beginning April 1st, 1910, and ending March 31st, 1911, seventeen thousand eight hundred and sixteen persons were refused permission to land in Canada, and seven hundred and eighty-four persons were deported. These numbers are not large when considered in relation to the number of immigrants who arrived in Canada during the year, one hundred and eighty nine thousand six hundred and thirty-three entering by the various ports, and one hundred and twenty-one thousand four hundred and fifty coming across the border from the United States. But, while one does not forget the work accomplished by the Department of Immigration in Great Britain and in other European countries, the question still arises, would it not have been possible to prevent the greater number at least of these undesirables from embarking for Canada? Arrangements have recently been made with the steamship companies by which most of those persons who are considered physically or morally unfit to be permitted to land in Canada, shall be taken back to the port of embarkation and provided with a ticket to their inland destination. As this implies considerable expense to the steamship companies, the inference is that persons desirous of sailing as emigrants will be subjected to a stricter examination on the part of steamship lines.

Much has been done by the provincial governments to dispel the ignorance of Canadian conditions by the distribution, in the various European countries, of literature containing information for those desirous of emigrating to this country. Thus, a knowledge of the regulations of the Canadian Immigration Act, and of the climatic and other conditions of the country, may be obtained. The difficulty is, of course, that so many do not avail themselves of this opportunity; and in spite of all that has been done, as is proved by the figures already given, many continue to come who are unfit to make good citizens and who, sooner or later, drift into hospital to swell the already large numbers there. However, conditions have much improved, and we hope they will continue to improve until each immigrant is at least physically worthy of the expectation expressed by the Minister of the Interior when he said that "Canada expects nothing from an immigrant except that he should succeed."

DR. WILLIAM BEAUMONT

IF Dr. William Beaumont was not a Canadian, at least his patient Alexis Bidigan, *dit* St. Martin was; and in some way much of the credit for the joint experiments upon digestion which were carried on by these two observers has been imputed to this country. Dr. Jesse S. Myer has just published, through the Mosby Company, the "Life and Letters of Dr. William Beaumont," but he has also given us the life and letters of Alexis St. Martin as well. The best biographies have been the fullest, and the researches of Dr. Myer leave nothing more to be desired. The introduction is done by Sir William Osler, and properly so, for at the time of St. Martin's death in 1880, in the eighty-third year of his age, when Dr. Osler was a resident of Montreal, he offered the courtesy of his services to perform an autopsy, and even suggested the purchase of the famous stomach for preservation in a museum. But the family was obdurate. They postponed burial until decomposition had made the body safe against the anatomists, and they buried it under eight feet of earth.

The most precious statement in the book is this: "I took him into my own family in April, 1823, at a time when he was helpless, sick, and suffering under the debilitating effects of his wounds, naked and destitute of everything but pain, a little 'breath of life,' and a wounded body. In this condition he remained with me, gradually improving, for a year or two, when he became able to walk about and help himself a little, but unable to provide for his own necessities. During this time I nursed him, fed him, clothed him, lodged him, and furnished him with every comfort, and dressed his wounds daily and for the most part twice a day." Dr. Beaumont made every effort to close the wound, and it was not until after he had cared for the boy for two years at his own expense, at a time too when his pay as army surgeon was only forty dollars a month, that it occurred to him to utilize the case for experimental purposes.

And St. Martin was not entirely tractable. He displayed a certain amount of interest in his own case. He allowed himself to be fed by a novel method, but he was resolute to the end that his whisky should be administered *per vias naturales*. He would leave his employer on the least, or no, provocation, and proceed to his home near Berthier, where he afterwards had a wife and five children living. There are sixty letters extant from Dr. Beaumont soliciting and commanding his return. The first report of Dr. Beaumont's experiments upon digestion was published in the *Medical Recorder* in 1825, Vol. VIII, No. 1, p. 14, but it bore the name of Surgeon-general Lowell to whom it had been sent by the author. This error, however, was corrected in a later issue.

However fine was his charity, Dr. Beaumont was a man of prompt and vehement speech. "Were I," he wrote, "reduced to the necessity of existing upon the charity of this borough I would commit suicide without scruple or hesitation." He published in a newspaper that his partner in practice had availed himself "of a treacherous memory to sacrifice his integrity." He offered to fight a duel with a fellow-officer who declined and afterwards aggravated his original offence. Dr. Beaumont then published him to the world as "a contemptible liar, a base villain, and a poltroon." Finally, he resigned from the army after a most acrimonious correspondence with his superiors. The picture which is given in the "Life and Letters" of Beaumont's domestic life is charming. There are letters to his father full of filial piety, to his wife, letters suffused with affection. His scientific method was most rigid, his observation keen, and his records unbiased by pre-judgement. It is fitting that this book should proceed from St. Louis where the subject of it spent so many years and where he lies buried.

THE two existing medical societies in Winnipeg are looking forward to amalgamation under a new name. It is felt by many members of both societies that a complete reorganization will result in even better work being done.

"THE early diagnosis of pulmonary tuberculosis" was the subject chosen by Dr. W. M. Hart in his address to the Saskatchewan Medical Association. The paper was an extremely interesting one and emphasized many points of value to the practitioner in the early diagnosis and treatment of tuberculosis. It was unanimously resolved that the paper should be printed and a copy sent to each member of the association.

The Grace Hospital at Toronto was severely censured in consequence of the death of Robert Scott, an insane patient who was killed through jumping from a balcony sixty feet high at the hospital. The coroner's jury recommended that the government grant should be withheld from the hospital until a suitable building is erected to replace the present structure. The hospital staff was exonerated from any blame in the matter. It appears that the building has been condemned by Dr. Bruce Smith, the inspector of hospitals and public charities, and the hope was expressed that an effort would be made to provide a modern hospital building without further delay.

An unfortunate incident has occurred at the Victoria Hospital at Prince Albert, Saskatchewan. On September 17th, last, the matron and the entire staff of nurses gave in their resignations to the board of governors. Their action is the result of charges which are alleged to have been made against their characters by one of the members of the city council, Mr. T. E. Baker, and by certain patients against the management of the hospital. An investigation of the charges of mismanagement was made by the committee and, with one exception, they were found to be groundless. As to the charges against the character of the nurses, these were denied by Alderman Baker. However, the resignations of the matron and staff, including the orderlies, have been accepted by the directors.

The burden of caring for the feeble-minded is becoming greater as the years go by. During the past year it has been impossible for the hospital authorities at Orillia and Woodstock, in Ontario, to receive all the applicants for admission to these hospitals. The Orillia hospital alone has three hundred and eleven applications on file, and there are sixty-nine more patients in the hospital than the building can conveniently accommodate. The greater number of these patients are Canadian born. Of the one hundred and twenty-five patients admitted to the two hospitals during the past year, ninety-four were born in Canada; and of the two thousand five hundred and seventy patients who have been admitted since these hospitals were founded, two thousand one hundred and eleven were born in this country. In many instances, several members of the same family are undergoing treatment, and from the records of these and kindred institutions, heredity appears as a very frequent cause of weak mentality.

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THERE is some justification for the belief that medical periodicals are sufficiently numerous, as well in Canada as elsewhere. But even to one who holds such views the latest addition to Canadian journals will be welcome, adding, as it does, more in quality than in quantity. The *University of Toronto Medical Bulletin*, in its first number recently issued, attains a high standard of excellence. It is described as a "Publication devoted to clinical and laboratory work carried on by members of the University of Toronto medical staff, in the city hospitals." To keep the graduates in touch with this work is one of the principal objects of the *Bulletin;* but one may hope that before long it may make a wider appeal, for with the excellent medical facilities enjoyed by Toronto, there is here an unusual opportunity of developing a periodical of recognized scientific importance.

The first number consists of twelve original contributions, all of interest and well presented. An interesting case of acromegaly is fully reported by Drs. Chambers, Bruce, and Mackenzie; unusual complications of typhoid are reported by Dr. Rudolf, and by Drs. Chambers and Cole. Other contributors include Drs. McVicar, Bates, Strathy, Thistle, Howland, Malloch, Primrose, Gallie, Stanley Ryerson, and G. W. Ross.

The *Bulletin* is published by the University Press. In appearance, and in quality of paper, printing, and illustrations, it leaves nothing to be desired. We congratulate the editor, Dr. C. K. Clarke, and all others to whom the credit may be due.

Book Reviews

THE EARLY PAPERS OF W. J. AND C. H. MAYO. A collection of papers (published previous to 1909). By WILLIAM J. MAYO, M.D., and CHARLES H. MAYO, M.D. Two octavo volumes, averaging five hundred and fifty pages each, illustrated. Price per set, cloth, $10.00 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

The object of the editor—or perhaps one should say editress—Mrs. M. H. Mellish, has been to collect and collate the papers and monographs published by W. J. and C. H. Mayo prior to the year 1909, when the first volume of the "Collected papers by the staff of the Mayo Clinic" was issued. The task was a difficult one, and the manner in which it has been accomplished in these two volumes reflects great credit upon Mrs. Mellish. That it has been a labour of love is very evident. The Mayos, like other busy men, evidently did not in the early days of their work, keep a careful list of their publications. Reprints were not so common in 1884 as they are to-day, and it is quite conceivable that the Index Medicus of that period would not contain all the references desired by the editor. But a careful search of the files of the then existing medical journals has doubtless made the list fairly complete. The papers, grouped under their respective headings, after the manner followed in the "Collected Papers," have been arranged in chronological order, and they thus afford a most interesting study of the evolution of the justly celebrated Mayo clinic at Rochester. These two volumes should, therefore, stand on the library shelf of every modern surgeon just in front of the series of "Collected Papers" which give the last word of the clinic on each subject touched upon. The hiatus was at the beginning of the series, and it has now been filled.

To consider, in detail, the papers included in these two volumes would be beyond the province of this review. It is also unnecessary, for many—nay most—of them are old friends, which need no notice. But a word as to the arragement of the papers will be of interest to our readers. The first three hundred and twenty-three pages of Volume I are devoted to papers upon the surgery of the alimentary canal, stopping at the duodenum; next follows one hundred and thirty-five pages upon the liver and gall-bladder, the remainder of the volume being devoted to articles upon the pancreas. Volume II begins with some general papers upon the peritoneal cavity, and then goes on to those dealing specially with the intestinal tract. Next, we find three articles devoted to the subject of operation for the radical cure of hernia, which is, in turn, followed by one hundred and ninety-four pages of genito-urinary literature. The vascular system is followed by the head—in which, inter alia, attention is given to the nasal sinuses and mastoid operations—and next follows some very interesting papers upon brain surgery. The papers on goitre are—as was to be expected—almost entirely the work of Charles H. Mayo. Under the caption, "Principles of Surgery," are collected several papers of varied interest, and the concluding articles—if we except a few case reports of minor interest—are from the pen of W. J. Mayo. They consist of graphic accounts of his visits to other surgical clinics in Europe and America, and also several addresses upon various subjects of general medical and educational interest.

To both volumes there is a very complete bibliography as well as a general index, which adds much to the value of the work. The paper, letter-press, and binding of this edition does great credit to the publishers, and is what one would expect from the house of W. B. Saunders Company.

THE TREATMENT OF SHORT SIGHT. By PROFESSOR J. HIRSCHBERG. Translated by G. LINDSAY JOHNSON. New York: Rebman Company, 1912.

This little book is a publication of an essay delivered by Professor Hirschberg to the students of Berlin. He classifies myopia into three grades, the highest grade ranging from 6 to 30 D. To illustrate the prevalence of the disease in Germany, the author states that of 12,328 patients in his clinic, 560 suffered from high degrees of myopia. After warning the optician in his own interest to avoid correcting such cases, the author cites some of the commoner complications of short sight; these are found to exist in thirty-four per cent. of advanced cases.

Great care should be exercised in prescribing lenses that are not too strong, particularly in high degrees, when both distance and near glasses are recommended to be worn. It is always best to examine under mydriasis; vitreous opacities, changes in the choroid, detachment of the retina, and cataract are some of the commoner complications met with. Professor Hirschberg is undetermined as to the efficacy of atropine in arresting the progress of the trouble in children, and considers subconjunctival injections of normal saline solution of some possible value. He is rather in favour of abstinence from near work and a change of surroundings. The methods introduced by Deutchman and Müller for the cure of detached retina are hardly warranted; absolute rest in a fixed position and a sub-retinal section of the sclera are more rational measures to be adopted. The practice of De Wekker of inserting gold wire in the globe, the author regards as dangerous. The removal of the lens may be done in selected cases, but with the greatest caution.

The cure of disease is the avoidance of conditions which bring it about. Marriage between myopes should be discouraged. Kindergarten work, such as sewing and weaving, are injurious practices, and children during their early years should not be allowed books for any protracted length of time. The author also advocates less work at school for young children.

A SYSTEM OF TREATMENT BY MANY WRITERS. Edited by ARTHUR LATHAM, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), and T. CRISP ENGLISH, M.B., B.S. (Lond.), F.R.C.P. (Eng.) Volume IV. Obstetrics and Gynæcology. Price, $24.00 for the set of four volumes. Toronto: The Macmillan Company of Canada, Limited, 1912.

This work is the fourth and final volume of a "System of Treatment," and is devoted to the subjects of Obstetrics and Gynæcology. The volume contains, also, an extensive index of the whole system.

The subject of obstetrics is dealt with in four hundred and seventy-three pages. After a short chapter on the general management of pregnancy, the complications and abnormalities of pregnancy are dealt with in alphabetical order.

Dr. E. Hastings Tweedy, of Dublin, contributes the chapters on the management of normal labour, and the management of labour in special presentations. Other complications of labour are then dealt with in alphabetical order.

The management of the normal puerperium is followed by a section dealing with the complications of the puerperium in alphabetical order. Affections of the breasts during pregnancy and the puerperium are dealt with in a separate section, and the management of the new-born child is followed by the obstetric operations in alphabetical order.

The subject of gynæcology occupies four hundred and ten pages. Mr. Victor Bonney, in the opening chapters of this section, deals with the general points in the technique of gynæcological operations, and the after-treatment and post-operative complications.

Diseases and disorders of the vulva, vagina, uterus, menstruation, ovaries, tubes, and broad ligaments are dealt with in alphabetical order, and special chapters are included dealing with non-hæmorrhagic discharges from the genital tract, pelvic cellulitis, disorders of the sexual function, hermaphroditism and pseudohermaphroditism, and diseases of the female urethra and bladder.

There is the usual tendency to repetition and overlapping common to such compilations, and difference of opinion is manifest throughout the book. Being devoted entirely to treatment of the various conditions discussed, the general style is practical, clear, and very concise, and this section of the "System of Treatment" will, no doubt, prove very valuable to the busy general practitioner interested in the subjects with which it deals. The general arrangement of the book is such as to facilitate reference to its contents.

THE result of the election of the second Provincial Medical Council of Saskatchewan was announced September 18th, last. The first council of the Provincial Medical Association was elected in 1909 for a term of three years. The council remains as before, with the exception of one member, Dr. McCullough, of Moose Jaw, having taken the place of Dr. Kelly, of Swift Current. For election purposes, the province is divided into seven electoral districts and each of these districts sends one representative to the council. The members elected are: Dr. Thomson, of Regina, president; Dr. Young, of Saskatoon; Dr. Irving, of Yorkton; Dr. Argue, of Grenfell; Dr. Eaglesham, of Weyburn; and Dr. McCullough, of Moose Jaw.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

DIGESTION AND METABOLISM. THE PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY OF NUTRITION. By ALONZO ENGLEBERT TAYLOR, M.D. Philadelphia and New York: Lea and Febiger, 1912.

THE DIAGNOSIS OF NERVOUS DISEASES. By PURVES STEWART, M.A., M.D., F.R.C.P. Third edition, revised and enlarged; four hundred and seventy-seven pages; two hundred and twenty-four illustrations. Price, $4.75. London: Edward Arnold. Toronto: D. T. McAinsh and Company, 1912.

THE THERAPY OF SYPHILIS. ITS DEVELOPMENT AND PRESENT POSITION. By DR. PAUL MULZER, of Berlin, with a preface by PROFESSOR P. UHLENHUTH, M.D. Translated by A. NEWBOLD. Price, cloth, $1.50 net. New York: Rebman Company, 1912.

AUTO-INTOXICATION AND DISINTOXICATION. AN ACCOUNT OF A NEW FASTING TREATMENT IN DIABETES AND OTHER CHRONIC DISEASES. By DR. G. GUELPA, of Paris. Translated by F. S. ARNOLD, B.A., M.B., B.CH. (Oxon). With an introduction by the translator and a chapter on the use of the method in the treatment of morphine addiction by OSCAR JENNINGS, M.D. Price, cloth, $1.25 net. New York: Rebman Company, 1912.

A TREATISE ON DISEASES OF THE HAIR. By G. T. JACKSON, M.D., and C. W. MCMURTRY, M.D. Illustrated with one hundred and nine engravings and ten coloured plates. Price, cloth, $3.75 net. Philadelphia and New York: Lea & Febiger, 1912.

PRACTICE OF MEDICINE. A MANUAL FOR STUDENTS AND PRACTITIONERS. By HUGHES DAYTON, M.D. Second edition, revised and enlarged. New York and Philadelphia: Lea & Febiger, 1912.

ELEMENTARY BACTERIOLOGY AND PROTOZOOLOGY. THE MICROBIOLOGICAL CAUSES OF THE INFECTIOUS DISEASES. By HERBERT FOX, M.D. Illustrated with sixty-seven engravings and five coloured plates. Price, cloth, $1.75 net. Philadelphia and New York: Lea & Febiger, 1912.

THE PRINCIPLES OF HUMAN PHYSIOLOGY. By E. H. STARLING, M.D., F.R.C.P., F.R.S. Octavo with five hundred and sixty-four illustrations. Price, cloth, $5.00 net. Philadelphia and New York: Lea & Febiger, 1912.

A MANUAL OF CHEMISTRY. A GUIDE TO LECTURES AND LABORATORY WORK FOR BEGINNERS IN CHEMISTRY. A TEXT-BOOK SPECIALLY ADAPTED FOR STUDENTS OF MEDICINE, PHARMACY, AND DENTISTRY. By W. SIMON, PH.D., M.D., and DANIEL BASE, PH.D. New (10th) edition, enlarged and thoroughly revised; illustrated with eighty-two engravings and nine coloured plates. Price, cloth, $3.00 net. Philadelphia and New York: Lea & Febiger, 1912.

LIFE AND LETTERS OF DR. WILLIAM BEAUMONT, INCLUDING HITHERTO UNPUBLISHED DATA CONCERNING THE CASE OF ALEXIS ST. MARTIN. By JESSE S. MYER, A.B., M.D., with an introduction by SIR WILLIAM OSLER, BT., M.D., F.R.S. With fifty-eight illustrations. St. Louis: C. V. Mosby Company, 1912.

BACTERIOLOGY AND PATHOLOGY FOR NURSES. By JAY G. ROBERTS, PH.D., M.D. Price, cloth, $1.25 net; illustrated. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents; The J. F. Hartz Company, Limited, Toronto.

THE PRACTITIONER'S ENCYCLOPÆDIA OF MEDICINE AND SURGERY, IN ALL THEIR BRANCHES. Edited by J. KEOGH MURPHY, M.C., F.R.C.S. 1443 pages, with illustrations; price, $8.00. London: Oxford University Press. Toronto: D. T. McAinsh and Company, 1912.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. WITH ESPECIAL REFERENCE TO THE APPLICATION OF REMEDIAL MEASURES TO DISEASE AND THEIR EMPLOYMENT UPON A RATIONAL BASIS. By H. A. HARE, M.D. Fourteenth edition; nine hundred and eighty-four pages with one hundred and thirty-one engravings and eight full-page coloured plates. Price, cloth, $4.00 net. Philadelphia and New York: Lea & Febiger, 1912.

HYPNOSIS AND SUGGESTION. THEIR NATURE, ACTION, IMPORTANCE, AND POSITION AMONGST THERAPEUTIC AGENTS. By W. HILGER, M.D. Translated by R. W. FELKIN, M.D., F.R.S.E.; with an introduction by DR. VAN RENTERGHEM (Amsterdam), translated by A. NEWBOLD. Price, cloth, $2.50 net. New York: Rebman Company, 1912.

THE PATHOLOGY AND TREATMENT OF DISEASES OF WOMEN. Fourth edition, rewritten by A. MARTIN and PH. JUNG. Only authorized English translation by H. SCHMITZ, M.D. With one hundred and eighty-seven illustrations. Price, cloth, $5.00. New York: Rebman Company, 1912.

THE CARE OF THE SKIN AND HAIR. By W. A. PUSEY, M.D. New York and London: D. Appleton & Company, 1912.

THE LOCAL INCIDENCE OF CANCER. By CHAS. E. GREEN. Edinburgh and London: Wm. Green & Sons, 1912.

REPRODUCTION IN THE HUMAN FEMALE. By JAMES YOUNG, M.D. Edinburgh and London: Wm. Green & Sons, 1912.

PRINCIPLES OF HYGIENE: FOR STUDENTS, PHYSICIANS AND HEALTH OFFICERS. By D. H. BERGEY, M.D. Fourth edition, thoroughly revised; octavo of 529 pages; illustrated; price, cloth, $3.00 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

SURGERY OF THE BRAIN AND SPINAL CORD BASED ON PERSONAL EXPERIENCES. By PROFESSOR FEDOR KRAUSE, M.D. English adaptation by Dr. Max Thorek. Volume II. Illustrated. Price $7.00 net. New York, Rebman Company, 1912.

Men and Books

By Sir William Osler, M.D., F.R.S.

XV. The Works of John Caius, M.D. In connexion with the four hundredth anniversary of the birth of John Caius, the governing body of his Cambridge college and the president and fellows of the Royal College of Physicians have published an edition of his works (Cambridge University Press, price 18s. net). Few men of his generation deserve to be held in more grateful remembrance, not so much for his works, though numerous and important, as for the character of the man and for what he did for the Royal College of Physicians and for his old college at Cambridge. Caius recognized the value of the organic life of the institutions of which he was a member. Of the London college he was president for many years, and he was "the inventor of that insignia of honour by which the president of the college is distinguished from the rest of the Fellows," and his silver caduceus is still carried by that officer. The annals of the college from 1555 to 1572 in manuscript appear in print in this volume for the first time. "He was so religious in observing the statutes of the college that, though old, he durst not absent himself from the college's *cunilia* without a dispensation." He restored the tomb of Linacre, the founder of the college, in St. Paul's Cathedral.

But Caius is most worthily remembered to-day by having, in Fuller's words, "improved the ancient Hall of Gonvil into a new college, of his own name," and to-day, as in the seventeenth century, he carries away, as Fuller has it, "the name of the college in common discourse." The charter of the new foundation, 1557, was accompanied with substantial gifts in lands and money, and two years later he became the master, though continuing his practice in London. While imbued with the new learning, Caius had a mediæval mind, filled with the sense of the universal symbolism in material things. On the occasion of the feast, when refounding the college, he gave a cushion of reverence, a rod of prudence—a silver caduceus still in its possession—and a book of knowledge. And this is seen in the gates of the new court, which he built: one low and little, Humilitatis; the next, a portico of handsome proportions, Virtutis; a third leading to the public schools, through which all had to pass for their degrees, was inscribed, Honoris.

As an author, Caius occupies a distinguished place in the literature of the sixteenth century. A profound scholar, he has the rare distinction, unique perhaps for an Englishman, of having been elected "dialectes Græci professor" at Padua, where he was the friend and colleague of Vesalius, with whom he lived for eight months. Following the example of Jerome Cardan, he wrote a work, "De libris propriis," and gives seventy-two titles, "including sixteen original works, seven versions from the Greek and Latin, and ten commentaries, besides texts discovered, edited, and amended." A majority remained in manuscript, and have been lost. The medical work by which he is best known is "A boke or counseill against the disease commonly called the sweate or sweatyng sicknesse," an exceedingly rare work, one of the few of his original editions that I have never been able to procure. It is the first monograph in English on a separate disease. Caius had studied the fifth outbreak, a remarkable epidemic which began at Shrewsbury in 1551 and spread rapidly through England with a very high mortality. One cannot but wish that he had given us more symptoms and less treatment, but there are many shrewd observations. He urges the people to "seke out a good physicien and knowen to have skille, and at the leaste be so good to your bodies as you are to your hosen and shoes," for which the best makers are sought.

The little book on "British Dogs," prepared for his friend, Conrad Gesner, has been often reprinted. His longest work is "De Antiquitate Cantabrigiensis," "a fardell of strange antiquities," as one of his friends calls it. One Key or Caius of All Souls' College, Oxford, having extolled the antiquity of his University as founded by Greek philosophers, companions of Brutus, and restored by King Alfred, at the instigation of Archbishop Parker, John Caius asserted the antiquity of Cambridge and "with all the forms of antiquarian certainty and precision he established its foundation by one Cantaber 394 B.C. and in the year of the world 4300—gaining a priority of 1,267 years from Alfred."

He edited several of the books of Galen, for which he collated manuscripts in Italy, some of which are now in the library of Caius College.

It is sad to think that a man of his learning and devotion should have lost touch with the members of his own college, and that his last years should have been darkened with unseemly quarrels. Apparently he stuck to the old faith and was charged, not only with a "shew of a perverse stomach to the professions of the Gospel, but atheism." The fellows and students of his own college, aided by the Vice-Chancellor of the University, the Master of Trinity, and the Provost of King's, sacked his chambers and made a bonfire in the college court of the ornaments and ecclesiastical furniture and vestments. Fuller's characteristic comment upon him is: "We leave the heat of his faith to God's sole judgement, and the light of his good works to men's imitation."

THE report of the Calgary General Hospital for August gives the following information: four hundred and three patients were admitted during the month, the total number of hospital days was five thousand two hundred and fifteen, and the number of births nineteen. Of the patients admitted, one hundred and fifty-four received treatment free of charge at a cost to the hospital of $5,223.48. The expenses of the hospital have increased greatly during the past year: in August, 1911, $5,542.55 was expended, while in the same month this year $7,348.59 was spent The number of patients, also, has increased, two hundred and eventy-eights being admitted in August, 1911, as compared with four hundred and three this year. At present, the hospital provides room for one hundred and fifty patients, and two hundred and eight patients are receiving treatment. The accommodation is far from adequate, and an extension is badly needed. In order to improve the conditions temporarily, two large tents have been hired and are in use. The question of submitting a by-law to the city to provide $150,000 with which to enlarge the hospital is under consideration.

Res Judicatæ

MEDICAL EDUCATION IN EUROPE

THE Carnegie Foundation for the advancement of learning has issued another of its important bulletins, which is the sixth in the series. Upon a previous occasion, it will be remembered, a similar bulletin was issued upon medical education in the United States and Canada. Whilst that publication did something less than justice to many institutions, its effect was instantaneous and profound. As a result, several medical schools in the United States closed their doors, and all of those in Canada which came under criticism added to their equipment, and increased their staff, and now conform with a higher medical standard. Although the present report was issued only a few months ago, results are already seen in more than one European institution. Indeed, one important medical school has entirely remodeled its pathological department and appointed a new director.

This bulletin, which is a volume of three hundred and fifty-seven pages, follows in the main the general plan adopted in the previous one. The writer, Dr. Abraham Flexner, first gives an historical statement in which he describes the background upon which modern medical education in Europe is to be seen. Then he considers the basis of medical education and the relation of professional training to the general school system. The branches which are usually studied in laboratories are then estimated, and in succession come the clinical studies and the hospital, as related to the problem of clinical teaching.

By way of introduction Dr. Henry S. Pritchett presents what is, in reality, an admirable summary of the report with certain reflections of his own. To some of these one must demur, or at least insist upon the provision that when the writer refers to America he does not necessarily include that part of the continent which is known as Canada. The report establishes the fact that well-trained young physicians find no difficulty in attaching themselves to a retinue of hospital staff physicians and surgeons in Germany, but Dr. Pritchett complains that in America this is practically impossible. To some extent, at least, he claims that this is due to the fact that hospital physicians, engrossed in practice, are unwilling that their prestige should be lessened by the scientific achievements of younger men working in their wards, and he charges the laymen in control of hospitals to break up this attitude by insisting that hospital opportunities do not exist for the professional benefit of the visiting staff. In Canada, as the medical schools come into closer relation with the university, the hospitals also seem to be drawn into the combination, and all three coördinate in harmony.

Again, Dr. Pritchett complains that in the United States the commercial aspect is given to the entire profession, because certain successful physicians exact fees wholly out of proportion to the service which they render. A physician, or surgeon, he says, who levies upon a rich man a fee of many thousand dollars, simply because he is a rich man, has exploited the patient at the expense of his profession. Accordingly, he is disposed to think that the interest of rich men is alienated from medical education, and that of the stream of generosity which has flowed out for the past twenty-five years none finds its way into the coffers of the medical school. Whether this reasoning be correct or not, it does not apply to Canada, for there is no case on record in which a Canadian physician or surgeon has exacted an exorbitant fee, notwithstanding the presence of an abundance of rich patients in their midst; and of all the faculties of one university at least none has benefited so largely in private gifts as the medial school.

But it would appear that the institutions of the United States were not so quick as the institutions in Canada to avail themselves of the advice which was offered in the earlier bulletin, that they should either mend their ways or go out of existence. Surveying the whole field, Dr. Pritchett affirms that scandal in medical education exists in America alone. In no foreign country is a medical school to be found whose students do not learn anatomy in the dissecting room, and disease by the study of sick people. It has remained for the United States to confer annually the degree of Doctor of Medicine upon hundreds who have learned anatomy from quiz-compends and whose acquaintance with disease is derived not from the study of the sick, but from the text-books. In no European country, he continues, is it possible to find such an "educational farce," and Dr. Pritchett concludes that if the least terms upon which a medical school can exist abroad were applied to America, three-fourths of the existing schools would be closed at once. And he adds that the remaining one-fourth would be easily and entirely adequate to meet the public need.

Another distinction between the medical situation in the United States and in Europe is that whilst quacks and quackery existed in both, in Europe a quack must register as a quack and cannot designate himself as a doctor of medicine. In the United States he is able to provide himself with the degree of Doctor of Medicine, sometimes by purchase but oftener by attending a nominal course at some proprietary medical school.

One theme runs through both bulletins, namely, that proprietary schools are the bane of medical education, and that safety alone is to be found in the universities. Whether the field under survey is the United States, England, or Scotland, the formula is the same, that the proprietary school is an unmitigated evil, and that hospital trustees are debasing charity by placing hospital facilities at their disposal.

It is a common contention that second-rate schools are a necessity in order that cheaply trained physicians be furnished for the sparsely settled districts of the country, but this bulletin proves that no physician, poorly equipped or well equipped, will go where a livelihood cannot be gained. "I hold it unrighteous in principle," the great Billroth declared, "to give the country worse doctors than the city;" and fortunately there is no law which compels ill-trained doctors to fasten themselves upon the backward parts of the community. In the old days, the incomplete surgeon, the Wundarzt, as he was termed, was licensed to ply his trade within a prescribed locality, but at the present day, as Dr. Flexner remarks, this species of professional villeinage is no longer suitable to democratic conditions.

This bulletin then carries four significant suggestions as summarized by Dr. Pritchett, which bear upon training for professional life: first, the dependence of such training on preliminary education and the necessity for a close relation between the secondary and the professional school; secondly, the part which right lines of study in the secondary school may play in determining the quality of the work which the student in the professional school is apt to perform; thirdly, the advantage which the average student derives from a logical arrangement of subjects, provided fair scope for elasticity and election is still preserved; and finally, the wholesome effect of an examination system, at the close of the professional study, which shall at one and the same time test theoretical knowledge, ability to think, and technical skill.

The profession of medicine, and those whom the profession of medicine is intended to serve, will be indebted forever to the Carnegie

Foundation and to Dr. Flexner for this extensive investigation. Medical education has been brought into the light, and teachers and institutions are made to feel their responsibility towards the profession and towards the world. Dr. Flexner has enunciated certain principles which, of course, are not new, but he has given them a certain newness by his force of presentation. He insists, for example, that medical education is an affair of education; that rules and formulæ will not suffice, that all education is one, that the student must integrate into himself and assimilate his teaching so that he becomes a new creature.

This is far from saying that the author is infallible. Indeed, he bears the marks of time and place, of birth and of that education which, on its own showing, is the worst in the world. The American is a mechanical person. He has not quite realized that there are people in the world living their own lives beyond the borders of the United States. In so far as those people differ from himself he accounts them mad. Reared in an atmosphere of democracy he can only regard those who prefer monarchical institutions as insincere in their opinion, dishonest in their expression, and servile in their nature. Without a classical education himself, he can only explain its prevalence in other countries on the ground that "an obsolescent education is one way of hedging an aristocracy about" (page 37). He is brought up in worship of the machine, and when he is brought face to face with German "homogeneity and uniformity" he rolls on the floor in ecstacy. He is incapable of understanding any system in which homogeneity and uniformity do not prevail. He cannot perceive that any system of education becomes vicious just at the moment when it becomes a system, and that the institutions natural to communities are the best just because they possess them. A community cannot adopt new institutions any more than a child can adopt a father.

So long as Dr. Flexner confines himself to observation and record, his results are precious and will prove themselves to be, as they have proved in the past, a powerful influence in reforming medical education. He is alert, industrious, and experienced; but when he attempts an historical survey and a consideration of the basis of medical education in other countries than his own, he comes to the task with closed eyes and a mind already made up.

Accordingly, he fails entirely to comprehend medical education in England and in France, because it is not governed by homogeneity and uniformity. If he himself had had a classical education he would probably not employ such words as "motivated" and "functionated," and he would perceive the barbarity which lurks in the phrase, "digesting the scientific point of view." It would be unfair to say that he is unjust. He does not understand. He and the Englishman are thinking in different categories. The English student is by nature individual and lawless. He takes his education in his own way, just as the Scotch student takes his education as he takes his catechism.

Still more strange, Dr. Flexner is so scientific and so determined to observe exactly, that his own records disprove his preconceived theories. In his historical survey he has nothing but scorn and humour for the incoördinated methods which go by the name of the English system, and admiration for German exactness; and yet, when he comes to consider in detail the teaching of medicine in the respective countries, he is bound to admit that in England "the method outlined fills every requirement of sound and thorough teaching" (page 208), whilst in Germany the clinical teaching is "the wrong proportion in the wrong chronological relationship."

If Dr. Flexner were to re-write his theories from his own evidence rather than, as appears to have happened, before he came upon the scene, we should have a different result. An appeal to the results does not convince him that the queer, incoherent, diverse methods employed in London are less effectual than the homogeneity and uniformity of Germany. All depends on what it is desired to accomplish, and who shall say that the average English physician is less competent than the average German to bring healing and comfort to the bedside even of a German patient? The English student, even if he acquires nothing else, acquires a certain humanity because he comes in continual and close contact with suffering human beings, whilst the German has been spending "three years mainly of listening."

It is not uncommon for German laboratory workers to fall ill, and it has been remarked frequently that they seek advice and treatment from an English colleague. The wonder is when, and where, German students learn to treat their patients. As a matter of fact, many of them never learn. Comparatively few become internes. It is quite true, as Dr. Pritchett remarks, that an American graduate in medicine can for the asking obtain the entrée to the clinics of Berlin, Vienna, or Munich. It is also true that the majority of German graduates begin practice without ever having been brought into personal contact with patients, precisely as happens in the United States.

By all the rules, English medicine should break down hopelessly when it is put to the test. But, as a matter of fact, it does not, either in practice or in scientific advancement. Much of the work which is credited to German laboratories and clinics is the product of English workers, and American workers too; and it has happened that these workers have been driven from their high seats because their results could not be made to accord with the traditions of the place. The very freedom of English medicine keeps it mobile and assimilative; and it would, one would think, have occurred to Dr. Flexner to enquire more closely how it is that the English field is the most fertile in Europe. It will not do to explain, as he does, these extraordinary results on the ground of occasional brilliancy. When the light is so steady there must be a primary cause. Indeed, it is not improbable that not even an occasional gleam would escape if English medicine were encased in a German cuirass.

The London schools, of course, at the moment are in a bad way, and Dr. Flexner's criticism will be an incentive to better things, as it has been in other cases where he confined himself to observation. What the remedy is no one appears to know, and none but the English themselves can find out. It is doubtful if his panacea of university control will serve; for, as he justly observes: "about university relationship itself there is no magic; its virtue depends wholly upon the character of the university; whether in the future the university connexion will prove equally important obviously depends on the future adequacy of the universities."

For years the conscientious physician has been in despair because he could not master the technique of German mechanics or employ continental machinery in diagnosing affections of the heart, when suddenly James Mackenzie, a village practitioner in Burnely, demonstrated that the laborious charts produced by revolving cylinders were inconclusive even when they were not fallacious. In medicine there is place for the mind as well as for the fingers.

To French medicine, also, Dr. Flexner does less than justice in his preliminary comment; and yet with extraordinary acumen he discovered later that "medical education in France depends on the accumulation of impressions which tend in time to classify and distinguish themselves" (page 285); and this because the French mind is plastic and logical, and can deal with material in no other way than by receiving impressions and subsequently arranging them in proper categories.

A. M.

Retrospect of Medicine

VACCINATION AS A PREVENTIVE AND THERAPEUTIC MEASURE IN TYPHOID FEVER

ALBERT AND MENDENHALL: REACTIONS IN ANTITYPHOID VACCINATION. *American Journal of Medical Sciences*, February, 1912.

WILLIAMS: VACCINATION AGAINST TYPHOID IN THE UNITED STATES ARMY. *American Journal of Medical Sciences*, March, 1912.

PHELAN: VACCINE INOCULATION PROPHYLACTIC AND CURATIVE OF TYPHOID FEVER. *Journal of American Medical Association*, 1912, No. 9.

CALLISON: THE THERAPEUTIC USE OF VACCINES IN TYPHOID FEVER. *American Journal of Medical Sciences*, September, 1912.

FROM a perusal of these articles one may get an idea of the advance made in the treatment of typhoid fever by the use of dead typhoid bacilli, as well as of some of the immediate results induced by this treatment. Albert and Mendenhall have observed the white cells under vaccine treatment and conclude that there is a polymorphonuclear leucocytosis as well as an increase in the large mononuclears. Their general conclusions, which are in accord with the observations of Williams and others, are:

1. Statistics based on a large number of cases show conclusively that antityphoid vaccination confers a marked degree of protection against typhoid fever.
2. The injection of typhoid vaccines induces a local reaction in all cases and a general reaction in some cases.
3. A previous attack of typhoid fever apparently causes the reaction to be more severe than is observed in individuals who have not had typhoid fever.
4. Antityphoid vaccination causes a marked increase in the specific agglutinins, opsonins, and bacteriolysins.

5. The injection of typhoid vaccines causes a marked polymorphonuclear, neutrophile, and large mononuclear leucocytosis.

6. The marked increase—both absolute and relative—of the large mononuclear leucocytes in the peripheral blood is the only leucocytic change which is common to both clinical typhoid fever and antityphoid vaccination.

7. Such occurrences suggest that these leucocytes have something to do with the formation of antibodies concerned with the production of antityphoid immunity.

8. It seems well worth while to attempt experiments on the artificial production of large mononuclear leucocytosis and to see what relation such may have to the production of antibodies in the presence of typhoid infection or antityphoid vaccination.

Evidence of protection through vaccination against typhoid fever is forthcoming from many sources which may be numerically expressed by saying that the incidence of the disease is reduced by fifty per cent., while the mortality is reduced almost seventy-five per cent.

Callison's article summarizes the published observations on the treatment of typhoid fever. In all, there are four hundred and seventy-five cases, with a mortality of 5·4 per cent. and relapse of 6·5 per cent., reported during the last three years. The conclusions closing this paper are:

1. Vaccine treatment in typhoid fever will reduce the percentage of deaths and lessen the number of relapses.

2. Complications are less frequent in vaccine-treated cases, and the original attack seems to be shortened in severe cases.

3. To give the best possible results, vaccine treatment should be instituted as early as it is possible to make a diagnosis, before the patient is exhausted and complications occur.

Vaccination is performed by injecting three successive doses, with ten-day intervals, into the subcutaneous tissue of the left arm over the insertion of the deltoid. The first dose contains five hundred million killed typhoid bacilli, the second and third dose each one billion bacilli in sterile salt solution. There is a definite, general, and local reaction—varying with individuals—lasting from a few hours to two or five days. Headache and fever(102°), malaise, backache, etc., while locally a swelling of tissues and in the axilla slight glandular enlargement, follow the injections. The Widal reaction is invariably positive after vaccination and usually remains present for nearly a year. In the United States Army the present plan is to vaccinate every three years.

EXOPHTHALMIC GOITRE

SOLOMON SOLIS COHEN: THE NON-SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE.

JOHN H. MUSSER: PROBLEMS IN THE TREATMENT OF EXOPHTHALMIC. *The American Journal of Medical Sciences*, June and July, 1912.

Each writer has set down at the end of his article the convictions or conclusions held on the subject. Dr. Musser laid down the following as his convictions:

1. Endemic goitre should not be treated surgically until proper general treatment has been employed for a long period.

2. Surgical intervention should not be advised in cases of goitre associated with functional or organic disturbances of other secretory organs until the associated disorders are removed or relieved.

3. If relapse occurs in spite of general treatment or in spite of treatment directed against the disorders of other organs, a goitre should then be treated surgically.

4. Medical treatment should be continued from six to twenty-four months. Favourable results should not be promised unless the patient is under the absolute control of a physician, so that treatment by rest, diet, bathing, physical therapy, and so forth, may be carried out with precision and continuity.

5. Surgical intervention requires the same rigid and prolonged after-treatment to give permanent results. Finally, my conviction is that the surgeon does too much and the internist too little in the treatment of goitre.

Dr. Solis Cohen, in his summary, says, among other things, that surgical treatment rarely becomes necessary in cases recognized early. In approximately fifteen to twenty per cent. of cases, surgery is made necessary by failure or inability to institute prompt or proper, and persistent, non-surgical treatment. In about five per cent. of cases surgery may become necessary, despite early and skilful hygienic and medicinal management.

The first element in treatment, therefore, may be stated as *early diagnosis*. Non-surgical treatment is usually prolonged: its keynote is individualization. It must be patient and persistent. Its principal element is *rest*. "Under such management, with perhaps occasional symptomatic medication, somewhere from twenty-five to thirty per cent. of all patients may be expected to get well. . . . The application of ice coils over the heart and cervical spine, the administration of trustworthy preparations of well-chosen organ-extracts and various forms of auxiliary medication, with perhaps the use of certain mechanical manipulations, topical applications, and electric modalities, will increase the number of recoveries to eighty per cent. or more."

ASTHMA

THE MANAGEMENT OF ASTHMA IN CHILDREN. BY H. H. MCCLENAHAN, A.M., M.D. *The American Journal of Medical Sciences*, June, 1912.

FURTHER EVIDENCE IN SUPPORT OF THE TOXIC PATHOGENESIS OF BRONCHIAL ASTHMA BASED UPON EXPERIMENTAL RESEARCH. BY ALLAN EUSTIS, M.D. *The American Journal of Medical Sciences*, June, 1912.

ADRENALIN AND ASTHMA. (COPY OF ABSTRACT. *Archiv. f. exper. Pathologie und Pharmacologie*, 1911, LXVI, 205). JANUSCHKE AND POLLAK.

The interest in asthma endures so long as its ætiology is a mystery and the treatment unsatisfactory. McClenahan's article, based upon the writer's experience of twenty cases and wide reading, presents the hopeful prognosis that the majority of infants and children suffering from asthma recover. Children are less liable to have attacks induced by irritation of the nerve filaments in the respiratory tract, by odours from animals or plants, than adults. They are less likely to be influenced by psychical impressions. In the management of cases occurring in young children, every possible source of irritation is to be considered, and since an attack of acute bronchitis induces a paroxysm in the majority of cases, the promptest attention to the first symptom of a "cold" is necessary. For the persistent wheezing and catarrhal bronchitis, the writer claims that the use of sodium iodide secures a decided benefit. And where there is general adenopathy or the bronchial glands are enlarged, ten to twenty minim doses, three times daily, of the syrup of hydrocloric acid bring relief. The fumes so highly recommended for adults fail with infants suffering from asthma, often increasing the cough. Adrenalin in from three to five minim doses has proven a most valuable remedy in two instances. It has likewise failed in the writer's practice. Morphin and again chloral hydrate have each given prompt relief. Nascent oxygen gave quick relief in a severe case.

Eustis, while working with Von Noorden and Richard Kraus, sought to prove this hypothesis: "If asthma is caused by intestinal toxæmia, a definite toxin exists, which causes bronchial spasms similar in action to muscarin, and this toxin originates in the intestinal canal." It is claimed that Charcot-Leyden crystals are amins closely allied to putrescin and cadaverin. On putrefaction the several amino-acids split off carbon dioxide and form their corresponding amins. Of these amins beta-imidazolylethylamin has a specific action on unstriped muscle tissue, causing contraction of the uterus as well as contraction of the bronchioles—inducing in rabbits and guinea-pigs great dyspnœa and death from complete occlusion of air by the tonic spasm of the bronchioles. Accidentally discovered while working with ergot, Barger and Dale later obtained this base from an extract of the intestinal mucosa of an ox. The actions of this base from the various sources,—ergot, intestinal mucosa, synthesis, and the putrefaction of histidin, were all similar. Using this base for experimental purposes, Eustis confirmed the results of Dale and Laidlaw,—contraction of the uterus and bronchioles, with death of the animal from very small doses. The lungs were found pale, enormously distended, and protruding from the thorax. Given by the subcutaneous and intraperitoneal method, the action on muscular tissue is entirely local, suggesting the detoxicating action of subcutaneous tissue. So far, this base has not been isolated from the blood of asthmatics. It has been isolated from three specimens of fæces, while in twelve other specimens the tests were negative.

The urine of asthmatics injected, induced in normal rabbits and guinea-pigs characteristic bronchial spasm and death, with the characteristic post mortem appearances of lungs already described.

These experiments, which must be accepted as preliminary evidence, suggest that the normal individual possesses the power of detoxifying all the toxic amins formed from intestinal putrefaction, while the asthmatic individual has lost this power.

The favourable action of adrenalin in cases of asthma, as shown by experiments on dogs and cats made by Januschke and Pollak, is due to the relaxation of bronchial spasm. All forms of the asthma experimentally induced are not favourably induced by adrenalin. Those due to muscarin and peptone are relieved, while those caused by beta-imidazolylethylamin and ergotoxin are unaffected. Thus, the use of adrenalin may serve to determine the part played by bronchial constriction in causing asthma.

Obituary

Dr. Antoine Longpre, of Papineauville, Quebec, died September 15th, in the eighty-first year of his age. Dr. Longpré was born at St. Léonard-de-Port-Maurice and studied medicine at Montreal and at New York; he graduated in 1857. He was a well-known figure in Papineauville, where he had practised his profession for the past fifty years, and where for many years he held the position of mayor.

Dr. W. McLeod, of Saskatoon, was thrown from his horse and instantly killed on Friday afternoon, September 20th.

Dr. J. J. Anderson, of Brandon, Manitoba, died September 21st, in the fifty-second year of his age. Dr. Anderson was born in Kemptville, Ontario. He began his professional career in Wawanesa, Manitoba, and after spending several years there went to Brandon, where he was superintendent of the hospital for the insane until a couple of years ago. Dr. Anderson was well known throughout western Manitoba, and his genial personality gained for him the respect and liking of all those with whom he came in contact. He leaves a widow and one child.

Dr. J. G. Collver, of Waterford, Ontario, died September 2nd, in the eighty-fifth year of his age. Dr. Collver was a well-known figure in Waterford, where he had practised for over forty years. He was born in Old Windham and is survived by one son and one daughter.

Dr. William Rear, of Toronto, died in the Nicola Street Hospital at Vancouver on September 29th, in the seventy-fourth year of his age.

Dr. Sydney Wright, of St. Thomas, Ontario, died from heart failure at Peru, Indiana, on October 2nd.

Dr. Thomas H. Quirk, of Calgary, was killed in a motor accident on October 1st.

Dr. John Coulson Howie, of Glasgow, Scotland, died in the General and Marine Hospital at St. Catharines, Ont., on October 3rd, in the fiftieth year of his age. Dr. Howie was the eldest son of the Rev. Robert Howie, of Glasgow, and was a graduate of Glasgow University. He practised for fourteen years in Glasgow and for several years was connected with the Samaritan Hospital for Women. He was obliged to give up his practice on account of ill health and came to Canada in the hope of gaining strength. He leaves a widow and three children.

Dr. William Rear, of Toronto, died in Vancouver, September 28th. Dr. Rear, who was in his seventy-third year, gave up his professional work three years ago and became interested in real estate and fruit farming in British Columbia. Dr. Rear was well-known in Masonic circles, and in politics was a Liberal. Death was due to heart failure.

Dr. E. H. Rouleau died September 30th, after a brief illness. Dr. Rouleau was a well-known physician in Calgary, and, for fifteen years, acted as Belgian Consul. He was born at the Isle of Verte, Que., in 1843 and was a graduate of Laval University.

News

THE CANADIAN PUBLIC HEALTH ASSOCIATION

The annual congress of the Canadian Public Health Association was held in Toronto on September 16th, 17th, and 18th. The meetings took place in the university buildings and throughout were a decided success. The attendance was in excess of last year, while the enthusiasm manifested in both the general sessions and the sections was most spontaneous. The general standard of the papers read was good, while their tenor was of such a vivid and yet practical character that discussions of great value, not only to the physician but to every one interested in social betterment, ensued. If any feature of the meeting should be accentuated, it is probably the interest taken in the event by the general public, a fact due largely to the marked influence which modern preventive medicine, in distinction to medical practice of the past, is beginning to exert on the general welfare of communities.

On Monday, September 16th, the meeting of the first general session took place and the papers read were: Dr. P. H. Bryce, "How shall Canada save her people from the physical and mental degeneracy due to industrialism as seen in the great cities of older civilization"; Dr. J. H. Elliot, "Tuberculosis"—this paper was followed by a discussion; Dr. H. G. Roberts, "Prevention of tuberculosis in the country"; Dr. Bruce Smith, "Hospitals, their relation to the community and public health"; Dr. Adam Wright, "Dust in the house and in the street"; Dr. J. W. S. McCullough, "The Ontario Public Health Act"; Mr. T. Aird Murray, C.E.; "Purification of water by slow and rapid sand filtration"; Dr. A. P. Reid, "Medical inspection of public schools."

In his paper, which explained the provisions of the New Health Act for the province of Ontario, Dr. McCullough emphasized the fact that the greater proportion of typhoid epidemics has arisen from the culpability of municipal authorities in respect to proper water supply and disposal of sewage. He instanced Ottawa, as an example in which over one thousand cases had occurred in a year, as a result of such neglect. The provisions of the present Public Health Act make it compulsory for municipalities to attend to such important matters. Other notable features are the constitution of local boards of health and the classing of tuberculosis as a communicable disease.

The sectional meetings were held on Tuesday, September 17th, and the papers read were: Section I. Military hygiene. Colonel G. C. Jones, "Sanitation of a besieged city or town"; Colonel D. B. Bentley, "The Sanitation of a bivouac"; Major T. B. Richardson, "Some observations on sanitation for the soldier"; Major Lorne Drum, "The Militia as a factor in public health"; Lieut. C. Laidlaw, "Simple means for ensuring safety of drinking water on active service." Section II. Milk Inspection. Dr. G. G. Nasmith, "Municipal milk inspection in Toronto"; Mr. Robert Awde, "Municipal food inspection"; Mr. L. A. Wilson, "Dominion meat inspection"; Mr. A. R. B. Richmond, "Municipal inspection."

Mr. Wilson quoted the following figures of condemnation made in Toronto during the past year:—the total number of carcasses condemned was 1,608; total portions condemned, 212,935; total carcasses slaughtered, 887,944. The detail figures are:—Cattle slaughtered, 117,256; carcasses condemned, 918; portions condemned, 34,307; sheep slaughtered, 41,660; carcasses condemned, 99; portions condemned, 3,471; swine slaughtered, 612,958;

carcasses condemned, 524; portions condemned, 168,701; calves slaughtered, 16,424; carcasses condemned, 53; portions condemned, 80; lambs slaughtered, 99,646; carcasses condemned, 14; portions condemned, 6,376.

Section III. Engineers and Architects. Mr. J. Race, "Toronto filtration plant"; Mr. T. Lowes, C.E., "A complete sewage disposal plant for a public institution"; Mr. H. G. Cowan, C.E., "How to obtain efficiency from pressure filters"; Mr. N. Couchon, C.E., "Housing and ventilation"; Mr. R. R. Knight, "Storm and surface water drainage in relation to sewage disposal"; Mr. T. H. Hogg, C.E., "The relations between the medical health officer and the engineer."

Section IV. Medical Officers of Health. Dr. C. J. C. O. Hastings, "A modern hospital for communicable diseases"; Dr. J. F. Honsberger, "The International Hygiene Exhibition, Dresden"; Dr. Whitelaw, "Municipal control of milk supplies"; Dr. A. J. Douglas, "The importance of trained sanitary inspectors."

Section V. Medical Inspection. Dr. J. H. Elliot, "Tuberculosis in children"; Miss L. L. Rogers, "Nursing side of medical inspection of schools"; Dr. W. E. Struthers, "Lantern slides of the work of medical inspection of schools in Toronto"; W. H. Doherty, D.D.S., "The dental aspect of medical inspection of schools."

Section VI. Social workers. Mr. J. H. T. Falk, "Prevention of social misery"; Dr. A. W. Thornton, "The dentist as a social worker"; these papers were followed by a symposium on "The scientific management of household work and workers."

Mr. Falk's paper was of particular interest. He said: "Charities, well-intentioned as they are, have done more to prevent the coming of better social conditions than anything else. They should not attempt to hide social injustice, but to find the causes of social misery and force them on the attention of the general public. Poverty, sickness and crime may in a large measure be reduced by economic reform, but such reform, resulting in the more equal reward of labour, necessarily comes slowly. It should be made compulsory for the wage-earner to provide against sickness and resultant dependence. In Toronto and Montreal unemployment is a serious factor in producing poverty, and health authorities should take measures to minimize its effects. Necessary provisions are the establishment of employment bureaus and information bureaus, through which the demand and supply of labour could be made public, compulsory registration of employees, etc. Public charities, as a rule, are guilty of gross abuse of their opportunities.

Usually they are run by missions which cater to the homeless man, and not the married man temporarily out of a job who refuses to frequent a mission. This is an injustice to the latter man, while the former is taught to depend on casual work." Father Minehan, in discussing this paper, suggested the compulsory instruction of mothers. He also advocated the prosecution of those drawing rent from unsanitary houses which breed vice and disease. Other speakers were Rabbi Jacobs and Mr. W. W. Lee.

Section VII. Laboratory workers. Dr. H. W. Hill, "The future of public health laboratory work"; Dr. Revell and Dr. Nasmith also read papers.

The second general session was opened by the presidential address, delivered by Dr. Charles A. Hodgetts. In the course of his remarks, Dr. Hodgetts criticized the existing methods of inspecting immigrants coming to Canada, and pointed out the necessity of a more efficient medical examination. He also called attention to the importance of hygiene as a branch of medicine and commented upon the fact that the College of Physicians and Surgeons does not require a student to show any knowledge of hygiene in his final examination. Professor H. B. Anderson then read a paper entitled, "Diet in relation to disease." This was followed by a paper by Dr. W. T. Sherreff, and the session concluded with a paper on "A threatened outbreak of typhoid fever in Fort William and means taken to avert it," by Dr. R. E. Wodehouse.

The annual dinner was held on Tuesday evening. The speakers included the Hon. W. J. Hanna, provincial secretary; Dr. J. A. MacDonald, editor of the *Globe;* Dr. Hodgetts, President Falconer, Dr. Hastings, Mr. Justice Riddell, and Canon Cody.

The third general session was opened on Wednesday morning by a paper by Dr. H. W. Hill. The following papers were then read: Mr. A. J. Green, "Forest open-air schools"; Symposium, "Communicable diseases"; Dr. G. G. Nasmith, "The value of a public health laboratory to a municipality"; Dr. W. B. Kendall, "Of what value are sanitaria as a public health measure"; Mr. W. W. Lee, "The effects of immigration on the national health"; Dr. J. F. Goodchild, "The open window"; and Dr. J. L. Chabot, "A Federal public health department."

In the afternoon the business meeting was held and in the evening a musicale was given.

A NEW hospital is to be established at Moose Jaw, Saskatchewan, at a cost of three hundred thousand dollars.

The Lamont Public Hospital was formally opened on Labour Day by the Hon. Duncan Marshall, minister of agriculture for the province of Alberta. The size of the hospital is thirty-seven by forty-three feet, and it is large enough to receive twenty patients. The total cost has been about $10,500; of this amount $1,000 was voted by the village council, but most of the money has been subscribed by the neighbouring communities.

More extensive hospital accommodation is needed at Windsor, Ontario. The only hospital in the county is the Hôtel-Dieu and this is by no means sufficient for a population of almost twenty thousand people, a population which is steadily increasing. The hospital is overcrowded, and it has been necessary, on several occasions, to refuse admission to most urgent cases, as it has been impossible to find accommodation for them. The matter was recently brought to the attention of the county council, and it is hoped another hospital will soon be erected.

A small-pox hospital for Ottawa is in course of construction. The hospital is being built on Porter's Island and will contain two wards, one for male and one for female patients; each of these wards will be provided with thirty beds.

It is proposed to make an addition to the general hospital at Niagara Falls. The name of the extension will be the Susan Thompson Memorial, and the funds will be provided by the legacy left to the hospital by the late Susan Thompson. The estimated cost is about thirty thousand dollars.

At a meeting of the Medical Association, which took place at London, Ontario, on September 25th last, it was unanimously resolved: "That the fee for day visits is to be $2.00, subsequent visits to be charged for at the rate of $1.50 to $2.00, if no hardship exists. The fee for night visits is to be $3.00." The meeting was attended by about fifty physicians.

A hospital is to be erected at Cobourg, Ontario. The building is to be ninety feet by seventy feet deep and will contain thirty-four beds. The work of construction is to be commenced at once.

The next meeting of the American Hospital Association will be held in Boston in September, 1913.

The Odd Fellows' Hall at Edmonton is to be converted into a hospital.

It is proposed to erect a general hospital in the eastern part of Montreal on somewhat the same lines as the Western Hospital. Although the suggested hospital is to be established by the Jewish people of Montreal and staffed entirely by Jewish doctors and nurses, it will be undenominational, and therefore available to the public in general.

The half-yearly meeting of the College of Physicians and Surgeons of the Province of Quebec was held in Quebec, September 25th last, under the presidency of Dr. L. P. Normand of Three Rivers.

The following have received the degree of M.B. from Queen's University, Kingston: F. C. Anderson, Kingston; L. E. Crowley, Kingston; J. M. Laframboise, Vankleek Hill; A. McIntosh, Williamsburg; W. E. Mulcashy, Holyoke, Massachusetts; and J. A. Stewart, Brockville.

The next annual meeting of the American Medico-Psychological Association will be held at Niagara Falls, from June 10th to June 13th, 1913.

An outbreak of diphtheria is reported from London, Ontario. Several cases are now undergoing treatment at the Victoria Hospital; four of the cases are from one family.

The town of Freeport, Ontario, is to have a sanitarium. The plans have been prepared and the work of construction is to be commenced at once. Fifteen thousand dollars have already been voted for the sanitarium, and the provincial department of health will provide twenty per cent. of the cost, in other words $3,600, $3,000 of which will be used to pay for the grounds. The province will also grant three dollars towards the maintenance of each patient, provided the charge made by the sanitarium does not exceed $4.90.

We understand from the London *Advertiser* that a campaign of instruction in public health is to be instituted by Dr. H. W. Hill, the director of the Institute of Public Health. Meetings are to be held in the rural schools and instruction given in the prevention of disease and the danger of its transmission from one individual to another.

A NEW hospital is to be erected shortly at High River, British Columbia. It is probable, also, that a hospital will be built at Penticton, British Columbia.

THE first annual meeting of the directors of the Chilliwack Hospital, British Columbia, was held on Wednesday, September 4th. The hospital was opened February 28th, last, and since then thirty-four patients have been treated and the number of hospital days has been seven hundred and twenty-nine. The year has been a satisfactory one, and the financial report shows a balance of $353.81 in favour of the hospital.

THE following cases of contagious disease were reported in Montreal during the month of August: diphtheria, 28 cases; scarlatina, 35 cases; typhoid, 51 cases; measles, 29 cases; whooping cough, 19 cases; tuberculosis, 87 cases; small-pox, 17 cases; cerebro-spinal meningitis, 2 cases; erysipelas, 6 cases; and varicella, 3 cases.

THE fortieth annual convention of the American Public Health Association was held at Washington on September 18th, 19th, and 20th last. Dr. Rudolph Hering, of New York, was elected president of the association, and Dr. James Roberts, of Hamilton, Ontario, vice-president. The association will meet next year at Colorado Springs, Colorado.

IT is proposed to establish a hospital for tuberculous patients in Quebec. A society has been formed consisting of some of the more prominent French-Canadian citizens, and generous contributions have been promised by the Quebec Seminary, Laval University, and other institutions. It is hoped that the movement will receive the general support of the citizens and that the much-needed hospital will be erected in the near future.

IT is the intention to erect a sanitarium at Berlin, Ontario, for patients suffering from tuberculosis. A by-law, which will provide fifteen thousand dollars for this purpose, was passed unanimously at a recent meeting of the city council.

At the meeting of the Canadian Public Health Association, Mr. L. A. Wilson, the chief inspector for the Dominion government in Toronto, stated that, during the past year, eight hundred and eighty-seven thousand nine hundred and forty-four animals had been slaughtered in Toronto and that of these sixteen hundred and eight carcasses and two hundred and twelve thousand nine hundred and thirty-five portions of carcasses had been condemned as unfit for consumption. In connexion with the question of pure meat supply, the erection of large, public abattoirs and the closing of all private slaughter-houses was strongly advocated by chief inspector Awde, of Toronto.

The cost of the new hospital buildings which are to be erected at Saskatoon next year, is estimated at about four hundred thousand dollars.

Dr. G. A. B. Hall, the medical officer of health for Victoria, British Columbia, gives a very satisfactory report of the health of that city. During the month of August, three cases of diphtheria and six of scarlet fever were admitted to the isolation hospital. Twelve cases of typhoid fever were treated, all of which had originated outside of the city. Only thirty-eight deaths occurred throughout the month, and of these seven were caused by cholera infantum.

The question of forming a provincial sanitary association in each of the provinces, Manitoba, Alberta, and Saskatchewan, is under consideration. The duties of the provincial health authorities are arduous and extensive, and the work of such an organization as is now suggested would be very helpful and would doubtless improve the sanitary conditions throughout the province.

During the year ending March 31st, 1912, six passenger vessels arrived at the quarantine station at Grosse Isle, Quebec, with small-pox, two with cholera, and one with typhus fever. Three hundred and sixty-seven vessels underwent quarantine and the total number of passengers examined was one hundred and ninety-three thousand three hundred and thirteen. One hundred and two passengers were transferred from the vessels to the hospital, and two births and seven deaths occurred in the hospital.

A sanitarium for the treatment of tuberculosis is to be established by the various cities and towns of Cape Breton. The cost of the construction and maintenance is to be shared by the civic authorities of the county.

Over two thousand cases of communicable disease were reported in Ontario during August last, and more than one thousand of these were cases of typhoid fever, which resulted in ninety-four deaths. Eight hundred of these cases occurred in Ottawa. One hundred and seventy-nine cases of tuberculosis were reported, resulting in one hundred and nineteen deaths; three hundred and eighty-four cases of whooping cough, with thirty deaths; one hundred and ninety-three cases of diphtheria, with twenty-seven deaths; one hundred and forty cases of scarlet fever, with ten deaths; fifteen cases of infantile paralysis, eight of which were fatal —more than half of these cases occurred in the Niagara peninsula. Thirteen cases of spinal meningitis were reported, all of which terminated fatally, thirty-one cases of small-pox, and sixty-three cases of measles. The cases of tuberculosis reported are much more numerous than during the same month of last year, the figures being one hundred and seventy-nine this year as compared with eighty-two in August, 1911; this is due, probably, to the stricter regulations concerning this disease embodied in the new Health Act.

Dr. J. W. S. McCullough, the chief health officer of Ontario, has been elected president of the Canadian Public Health Association for the year 1912-1913.

The new hospital at Orangeville, Ontario, was formally opened on October 1st.

Dr. Beeman has been appointed health inspector for Magrath, Alberta, at a yearly salary of one thousand five hundred dollars.

Dr. J. P. Cade has been appointed medical officer of health for Prince Rupert, British Columbia.

The plans are being prepared for the extension of the isolation hospital at St. Thomas, Ontario. It is proposed to utilize the building which now serves as an isolation hospital and which was erected seven years ago. A wide verandah is to be placed on the south side, and the building is to be provided with modern appliances. The public wards will be nine feet six inches by seventeen feet and will contain two or three cots each; and the private wards will be eight by twelve feet. The cost of the alterations will be about three thousand dollars.

THE General Hospital at Brandon is filled to its utmost capacity. At the beginning of October there were one hundred patients in the hospital, and thirty of these were suffering from typhoid fever.

THERE has been a good deal of typhoid in Edmonton throughout September and October. The milk supply is suggested as a possible source of infection. Early in October almost one hundred patients were undergoing treatment in the various hospitals of the city.

THERE are over one hundred patients in the Calgary General Hospital who are suffering from typhoid fever. Both the General and the Holy Cross Hospitals are overcrowded, and at present over sixty patients are receiving treatment in the General Hospital for whom there is no room in the wards: they have been placed in cots in the corridors and on the balconies.

HOSPITALS are to be built at Sedgewick, Alta., and at Davidson, Sask.

THE new St. Paul's Hospital, which is in course of construction at Saskatoon, will be four storeys in height and will give accommodation for one hundred and seventy-five patients. The present hospital building will be converted into a nurses' home.

THE question of building a hospital at Edson, Alberta, is under consideration. The population of the town is one thousand five hundred, and the only hospital is a small one which provides accommodation for five patients only.

THE regulations of the Ontario Public Health Act require that all private hospitals shall take out provincial licenses. In making application for a license, the hospital must give information concerning its financial condition, the accommodation of its building, its sanitary, ventilation, and heating arrangements, its water supply, and the facilities for escape in case of fire. These regulations came into force on October 1st, last, and any private hospital that neglects to provide itself with the necessary license is liable to a fine of twenty-five dollars a day.

Eight hundred dollars has been given by Major R. W. Leonard, with which to build a cottage on the grounds of the Sir Oliver Mowat Memorial tuberculosis hospital at Kingston. The cottage is to be called the "Rowland Cottage."

Whooping cough and measles were very prevalent in Ontario during September. On the other hand, only four cases of smallpox occurred, which is the smallest number of cases of this disease which have been reported in any one month for thirteen years.

There has been comparatively little typhoid fever in Toronto this year. From January 1st to September 31st, one hundred and eighty-nine cases were reported, whereas during the same period in 1911, there were three hundred and eighty-five cases, and in 1910, five hundred and eighty-eight. During the month of September this year, fifty-one cases were reported: this compares favourably with last year's record, when ninety cases were reported during the same month.

The necessary funds are being collected with which to erect a hospital at Ganges, on Salt Spring Island, B.C.

The Prince County Hospital at Summerside, P.E.I., was opened recently. The cost of the building and equipment has been about $12,000. The site on which the hospital is built and the lot of land adjoining it were given by residents of Summerside.

The hospital at Humboldt, Saskatchewan, was opened October 3rd, last. The cost of the hospital has been $35,000.

One hundred and five patients were admitted to the Moose Jaw Hospital during September; thirty-five of these were cases of typhoid. During the same month, one hundred and twenty cases of typhoid were treated in the Saskatoon Hospital. It has been difficult to provide accommodation for all the patients, and the construction of a new hospital at Saskatoon is looked forward to with relief. The new building will be placed in the university grounds, and, when completed, will be able to accommodate one thousand patients. The cost will be about $1,000,000.

In spite of higher matriculation requirements a hundred and twenty students have registered in the first year medicine at Toronto University.

Dr. B. P. Watson, F.R.C.S. Edin., has been appointed to the chair of gynæcology and obstetrics in the University of Toronto. Dr. Watson, who has acted as assistant to Professors Barbour and Simpson, of Edinburgh, will preside over the combined departments of the late Dr. T. F. W. Ross and Dr. Adam Wright, who has resigned.

By a new arrangement in regard to the teaching in the medical department of the University of Toronto, each student, while clinical clerk, will live in Toronto General Hospital for three weeks.

A new Foundling and Baby Hospital is to be built at Montreal. The present building, which has been in use for twenty-one years, is not now large enough for the work of the hospital, and a building fund of over fifty thousand dollars has already been subscribed. The new building will provide room for one hundred cots and will be situated near McGill University, where the site has been definitely settled.

The annual meeting of the directors of the Ottawa General Hospital took place on Tuesday, October 8th. On this occasion it was resolved to enlarge the hospital and the Lady Stanley Institute, and an earnest appeal is to be made to the public to help in collecting the necessary funds. The east wing of the hospital has already been extended and sun rooms and a roof garden have been provided at a cost of nearly ten thousand dollars. But, in order to meet the increasing demands for admission to the hospital on the part of patients, the hospital must be still further enlarged, and to do this a sum of two hundred thousand dollars will be required.

Four hundred and fifty-eight deaths were registered in Toronto in September last, a death rate of 12·4 per thousand of population, and of these one hundred and seventy-five were under one year of age. Fifty-two cases of typhoid fever were reported, ten of which were fatal.

Four cases of typhoid have been reported from Port Hope, Ontario.

A SERIOUS epidemic of diphtheria has broken out among the Indians at Turtle Lake, Ontario. Several deaths have already occurred.

THE medical examination of forty-one thousand children in the Toronto schools has resulted in the detection of sixty-two cases of contagious disease, including two cases of tuberculosis, four of diphtheria, and one of scarlet fever. The dental examination revealed the fact that out of fifty-two children examined, the mouths of thirty were in bad condition.

SEVENTEEN cases of typhoid fever have been reported in South Vancouver. The milk supply is spoken of as a possible source of the infection. It is stated that one milk vendor continued to conduct his business while suffering from the fever.

DR. JOHN STEWART, Dr. A. W. H. Lindsay, and Professor Fraser Harris have been chosen to represent the province of Nova Scotia on the Dominion Medical Board.

A SITE has been purchased at Medicine Hat on which to erect a Roman Catholic hospital.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Canadian Journal of Medicine and Surgery, October, 1912:

Address in surgery	Arthur E. Giles.
The President's address at the annual meeting of the Canadian Medical Association	H. G. Mackid.

The Canadian Practitioner and Review, September, 1912:

Constipation	Helen MacMurchy.
Two cases of angioneurotic eruption due to aspirin	H. B. Anderson.

My personal experience with the use of nitrogen gas in the treatment of pulmonary tuberculosis . . . Angus McKinnon.
A medical commission . . . . John Hunter.

The Public Health Journal, September, 1912:

Municipal powers in dealing with town planning schemes . . . . . R. A. Outhet.
Modern public health teaching and practice in relation to the control of tuberculosis . . . . . F. F. Wesbrook.
Methods adopted by the city of Saskatoon for the purification of domestic water supply . . . . . . G. T. Clark.
Municipal food inspection . . . P. B. Tustin.
Notification of phthsis . . . . D. A Craig.
Hypochlorite treatment of water for a temporary auxiliary water supply . . E. A. James.

Le Journal de Médecine et de Chirurgie, September, 1912:

Valeur actuelle de la therapeutique antituberculeuse . . . . . . L. Venon.
Tumeur du sein . . . . . P. Delbet.
Ulcérations linguales . . . . . Dr. Potherat.
L'antisepsie buccale par l'Iode . . . M. P. Carles.
Lésions rénales unilatérales compliquées d'urémie . . . . . . J. Castaigne.
Le végétarisme et les idées actuelles sur le rôle de la digestion . . . Professor Gley.

Dominion Medical Monthly, October, 1912:

Hyperextention of the knee following hip disease . . . . . B. E. McKenzie.

Le Bulletin Médical de Québec, September, 1912:

L'expertise médico-légale et les reformes que l'on pourrait y apporter . . . A. Vallée.
Appendicite simple ou endo-appendicite . . E. Couillard.

The University of Toronto Medical Bulletin, July, 1912:

Neuritis of the external popliteal nerve following typhoid fever	R. D. Rudolf.
Laboratory tests in the diagnosis of general paresis	C. S. McVicar, Gordon Bates, and G. S. Strathy.
Salvarsan in pernicious anæmia with reports of two cases treated simultaneously	W. B. Thistle.
Juvenile parasyphilitic affections	G. W. Howland.
A case of acromegaly	G. Chambers, H. A. Bruce, and J. J. Mackenzie.
Dislocation of the patella, with rotation about a horizontal axis	W. J. O. Malloch.
A method of preserving the finger in a case of enchondroma of a phalanx, complicated by fracture	A. Primrose.
A treatment of fracture of the upper extremity and shaft of the humerus	W. E. Gallie.
Report of a case of fracture of the tibia and fibula, treated first by plaster splints and later by plating	E. Stanley Ryerson.
A case of carcinoma arising from a lupus scar	G. Chambers.
A case of typhoid fever complicated by epididymitis and polyarthritis	G. Chambers and C. E. Cooper Cole.
Notes on a case of regularly-recurring ventricular extra-systole	G. W. Ross.

Medical Societies

VALLEY MEDICAL SOCIETY

A SUCCESSFUL meeting of the Valley Medical Society took place at Kentville, Nova Scotia, on September 18th last, on which occasion between twenty-five and thirty members were present. An interesting address was given by Dr. Mellar, the superintendent of the Kentville Sanatorium, and papers were read by Dr. James Ross, Dr. L. R. Morse, and Dr. John Stewart.

The midwinter session of the society will be held at Bridgetown, Nova Scotia.

CAPE BRETON MEDICAL SOCIETY

THE annual meeting of the Cape Breton Medical Society was held in the municipal council chamber, Sydney, on Wednesday, September 24th. The presidential address was given by Dr. G. H. Murphy, of Dominion. Papers were then read by Dr. Kendall, Dr. E. O. McDonald, Dr. M. T. McLean, Dr. R. C. McLeod, and Dr. M. D. Morrison. These were followed by two case reports, presented by Dr. Sullivan and Dr. McDonald.

The election of officers for 1912-1913 resulted as follows: president, Dr. A. Love, of Sydney Mines; vice-president, Dr. J. K. McLeod, of Sydney; secretary-treasurer, Dr. J. Lynch, of Sydney.

MANITOBA MEDICAL COUNCIL

THE annual meeting of the Manitoba Medical Council was held in the medical library, Winnipeg, October 2nd. The officers elected for the year 1912-1913 are: president, Dr. McCharles, Manitou; vice-president, Dr. E. L. Pope, Winnipeg; treasurer, Dr. W. A. Gardner, Winnipeg; registrar, Dr. J. S. Gray, Winnipeg. Dr. Thornton, Deloraine; Dr. McCalman, Dr. J. S.

Gray, and Dr. W. A. Gardner are the representatives of the university. Dr. Thornton and Dr. Gray were chosen as representatives to the Dominion Medical Council.

WINNIPEG MEDICO-CHIRURGICAL SOCIETY

The regular monthly clinic at the Winnipeg General Hospital was held October 7th. Dr. S. W. Prowse presented a case of conical cornea. Dr. H. P. H. Galloway presented two cases of Potts' disease of the spine on which Alabee's operation was done with very good results. Dr. Fred. Young presented a case of hæmiplegia due to syphilitic thrombosis. Dr. J. Halpenny presented three cases of general peritonitis; (*a*) typical perforation; (*b*) ruptured pyosalpynx; (*c*) ruptured appendix. Dr. Chas. Hunter presented a case of erythromelalgia and a case of auricular fibrillation. Dr. J. R. Davidson presented a case of a large upper abdominal tumour for diagnosis. This case had been to other clinics and had returned without a diagnosis. Dr. S. J. S. Peirce presented pathological specimens: (*a*) acute dilatation of the stomach and duodenum occurring in typhoid fever; (*b*) deciduoma malignum; (*c*) gas cyst of the mesentery in an infant six weeks old.

TORONTO ACADEMY OF MEDICINE

The monthly general meeting of the Toronto Academy of Medicine was held on Tuesday, October 1st, in the Academy building. The meeting was the occasion of the presentation by Dr. McCullough of a volume of clinical records of women patients treated in the Edinburgh Royal Infirmary during the years 1787 and 1788 in the service of Dr. Gregory, chief clerk Simon Frazer. In making the presentation of this interesting volume, Dr. McCullough made some reference to the work of the physician in question.

Following Dr. McCullough, Dr. R. A. Reeve, the newly elected president, delivered his inaugural address, choosing as his subject, "Remarks on the value and the fallacies of statistics." The paper was a most interesting one.

The final address of the evening was a brief one, delivered by Sir Hector Clare Cameron, emeritus professor of surgery in the University of Glasgow, on the treatment of abscesses. Sir Hector made especial reference to the historical aspect of antiseptic surgery, and quoted largely from results of his own experience in the treatment of ordinary mammary and cold abscesses. Dr. Powell proposed a vote of thanks, which was carried, after which the president and Sir Hector Cameron held an informal reception. The attendance was one hundred and fifty.

SECTION OF MEDICINE. The monthly meeting of the Section of Medicine was held on Tuesday, October 8th. Dr. H. B. Anderson, chairman of the section for the ensuing year, briefly outlined the character of the work to be undertaken during the winter months, after which the speaker of the evening, Dr. Frederick B. Price, of London, was introduced.

Dr. Price's subject was "Recent advances in the diagnosis, prognosis, and treatment of heart disease." The following is a synopsis of this paper: Cardiac arrhythmia and the action of digitalis in heart conditions should be studied by the polygraph and micro-cardiagraph. Arrhythmia due to extra-systole might be of little importance, while irregularity due to lack of conduction by the bundle of His might be of the greatest significance. In the treatment of heart conditions the beneficial action of digitalis is almost confined to cases of auricular fibrillation, as is shown by a number of cases under observation at Mount Vernon Hospital. The amount should be large at first, doses of one to three drams per day being used. The proper quantity for each patient, however, should be judged by the amount under which they do best. Digitalis should be kept up for the rest of their lives. It should be prohibited in cases where there is any fever. The paper was discussed by Professor McPhedran, Drs. E. W. Ross, Graham Chambers, Rudolf, and Mackenzie. After the meeting a reception was given to Dr. Price.

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THE TREATMENT OF ROTO-LATERAL CURVATURE OF THE SPINE

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AN extract from an editorial in the *American Journal of Orthopedic Surgery*, 1909, may serve to indicate concisely the present attitude of the profession toward the treatment of this deformity:

"Thus there are at present two widely differing points of view, both advocated by orthopedic surgeons of great experience. First, the deformity should be corrected by force and, in the corrected position, a plaster-of-Paris jacket applied temporarily, to be changed once or twice, so long as further improvement can be secured. Following this a really effective brace or corset is to be worn for many months and muscular exercise pushed to its limit in competent hands. Second, by the use of muscular exercise and stretching as much as can be accomplished and a more permanent and safer improvement brought about."

This citation presents an issue, an important issue, implying a radical difference in methods of treatment, but the statement is so brief that at least one side is inadequately presented. The words "muscular exercise and stretching" do not adequately describe what may properly be called developmental treatment. The two methods may be set in contrast as the mechanical and developmental, notwithstanding that each may employ to some extent the means emphasized by the other. In all essentials of treatment the one method is mechanical and the other educational and developmental. The purpose of this short essay is the advocacy of treatment along developmental and educational lines. Since

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Read at the meeting of the American Orthopedic Association in Atlantic City, May, 1912.

1891 I have followed consistently this plan of treatment, departing from it in but few instances. The work has been directly under my supervision, five hundred cases having received treatment of whom I have made careful records and whose management came intimately under my own observation. The average time under treatment was about three months. Attendance in the gymnasium varied from one to three hours per day for six days in the week. The records taken on admission are:

1. Measurement of the circumference of thorax and of abdomen on forced inspiration and forced expiration.

2. Height, weight, examination of the spine as to the degree of mobility, examination of the feet to determine efficiency or weakness, physical examination of the heart and lungs, determination of any lack of symmetry in the lower extremities or pelvis. A considerable proportion of the patients were photographed, because photography afforded the most satisfactory method of record. This is done before the patient receives any instruction, and she is allowed to take her ordinary habitual attitude without modification. When photographed subsequently, after more or less training, the patient is expected to profit by her work and to bear herself accordingly, assuming and maintaining whatever is, for her, the ideal attitude.

The work may be described under three heads: (1) mechanical, (2) developmental, (3) educational.

Before amplifying these divisions it will not be inappropriate to note some points in diagnosis and ætiology. It has been a surprise to know how many there are in the profession who regard the term "spinal curvature" as describing one, and one only, definite condition. A broad, general distinction should be made which is elementary. The term "spinal curvature" is often employed wrongfully, I consider, to denote deformity resulting from tubercular or other disease of the vertebræ, causing destruction of the bodies, a falling together or coalescing of these, a shortening of the anterior aspect of the spinal column, and a consequent projection backward of the corresponding spinous processes, causing angular projection backward. The word "curve" does not properly describe this condition, as the backward projection generally presents an angle. It would be better to speak of it as angular deformity resulting from disease of the vertebræ, or to use the expression, "Pott's disease with deformity."

Sometimes, however, resulting from tubercular disease, there is also a lateral deviation of the column; and in the early stages of the affection the lateral deviation may present itself, and not infrequently does so, before the backward angular projection has appeared. This condition may be very misleading and may cause one to fall into serious error; for it is a serious blunder to confound these two affections of the spine. One is a *disease* tending to a fatal issue; the other is a *deformity* without present existing disease, and causing in many instances but little inconvenience and disability. The one demands that attention be given to two fundamental factors in its treatment, first, complete rest for the diseased part, and secondly, the best means for increasing the general health, flesh, and tone, the employment of the most efficient aids to increase the power of resistance to the disease. The other—roto-lateral curvature—if it points to disease, points to states, the acuteness of which has long passed and which now require treatment directed to the rectification of deformity and any consequent disability.

It may be well to point out that the causes of roto-lateral curvature are numerous and varied. Radiography has shown that congenital defects are quite common. Just as asymmetry is sometimes found in other parts, such as ears unevenly placed, one eye lower on the face than the other, etc., so we may reasonably look for some departure from erectness in a part so unstably placed as the spine and for lack of symmetry in the parts of the pelvis and in the lower extremities. The congenital condition is well shown in two *x*-ray cuts here presented (Fig. 1.).

Accelerating causes coming subsequently serve to increase the deformity to such an extent that the curvature is pushed into notice in childhood, most frequently about the time of puberty. Once there is a departure from the norm in the matter of erectness, then careless habits in standing and sitting, unwise dressing, near-sightedness, etc., may serve to accentuate the deformity.

MECHANICAL TREATMENT. In trying to maintain the upright attitude, gravitation is a foe to ideal erectness. Spirit and energy should be manifested, not less in erectness and bearing than in countenance and speech. If a tall chimney or a high fence were leaning, it would seem the natural thing to shove it forcibly into an erect position and then supply a mechanical prop to maintain it there, and similarly forcible replacement and maintenance have been the chief means commonly recommended to correct deformities of the spine. There is, however, a manifest and radical difference between the subjects upon which or upon whom we are to exert our corrective efforts. The one is inanimate and obeys the laws of gravitation without protest, cannot form a habit, is not made weaker by mechanical pressure, has no vital organs to be protected, has no soul to express itself in countenance and bearing, no educational possibilities. The other is a highly organized, sentient being having a complex, highly organized, central axis—the spine, manifesting a a tendency to form habits which constitute the largest governing influence in life, easily learning to appropriate a crutch or support, possessing muscles made weaker by pressure and by being thrown out of action—the central axis forming an important part of the thorax charged with the protection of heart and lungs, and intended by nature to move untrammeled.

Mechanical support applied not only to correct but to maintain the correction, so as to keep the spine erect, implies the application of force that is lifeless, unyielding, and physiologically hurtful to a part which demands freedom of movement, development, and education. A mechanical appliance strapped or laced about the thorax compresses the muscles, causing them to atrophy, restricts the movements of the heart and lungs, lessening their powers of efficiency and of aeration of the blood, and—most important of all—encourages in the patient a habit of dependence instead of permitting a training to self-reliance. Such a corrective agent is restrictive; the corrective agency should be developmental. It impedes and hampers function; it should stimulate and inspire better functioning. I would prefer, in most cases, that the deformity should remain rather than it should be corrected—even if that were possible—by means so injurious, tending to hinder the child's normal development.

One should not readily assume that correction of the deformity will result from the use of mechanical supports. Much will depend upon the location of the deformity. If it is present in the cervical or high dorsal region, it is mechanically impossible to exercise any considerable corrective force without including the head or neck, or both. This is highly objectionable to the patient. If the curvature is found below the mid-dorsal region, mechanical force may be successfuly employed; but when the fixation apparatus is removed, there is an inveterate tendency to relapse into the old position, a tendency made worse by the muscular atrophy caused by the mechanical appliance. Advocates of mechanical methods have likened the treatment to the forcible manipulative and retentive treatment of congenital club foot; but the cases differ so widely that there is no analogy which should justify reasonable comparison. In the case of the spine the erect attitude tends to precipitate relapse. In the use of the foot weight-bearing tends to maintain the correction already effected by mechanical means. In the spine the continuance of a mechanical suport after correction is unnatural and detrimental; in the use of the foot a strong force to maintain correction may be exerted by the boot in a perfectly natural manner.

Mechanical means may be employed to aid in the correction without doing injury if they be employed temporarily. It is the employment of mechanical force as a continuous agency, making pressure on muscles, skeleton, and important organs, and acting as a crutch, which proves injurious. I should consider a harmful mechanical agency any brace or corset which presses upon and constricts the trunk for more than a few minutes at a time.

Mechanical means may be employed so as to be helpful and not hurtful, and are such as the following:

1. Direct extension, supporting the weight of the body by straps passing under the chin and occiput, permitting the patient thus to suspend the entire weight of the body for at least several minutes at a time. The monotony of the proceeding will be less if arrangements are made by which the patients, while thus supported, can swing through a comparatively large arc. The exercise so given, which otherwise might prove irksome, is thus changed into play; also, a number of children can in this way work together; and for years I have observed that they form various combinations, taking hold of hands, and adopting a great variety of means which prove attractive to children and youths. This exercise really serves developmental purposes. The movements of the spine in swinging, the stretching for the few minutes during which it is done, and the returning to the normal, unstretched condition serve as a species of deep massage for parts that could not well be reached by any ordinary methods, thus affecting the deep, spinal circulation; hence, it may be said of this mechanical means that it is truly developmental and has no restrictive elements.

2. Extension with side force. One of the illustrations given in this paper will show what I consider the most effective means that has been employed for the application of a direct force, pushing the deformed ribs and spine into a position of correction (Fig. 2). While the patient is extended as indicated, and while even heavy weights amounting sometimes to fifty pounds are strapped to the feet, a girth is drawn around the thorax so as to press obliquely forward and lateralward, carrying the prominent, backwardly placed ribs forward, pressing the convexity of the spine toward the mid-line, and untwisting the rotated vertebræ. While thus sus-

pended and mechanical force employed, all the organs of the body are left perfectly unhampered, free breathing is permitted, and there is no pressure upon the ribs of the concave side of the curvature. Pressure is maintained for as long a time as the endurance of the patient renders advisable, and is found to be from one minute to fifteen, and may be repeated several times during the day. The application of this mechanical force can do nothing to produce atrophy, but, on the other hand, as stated in a former paragraph, becomes a species of massage, reaching even to the ligaments deeply placed upon the concave aspect of the deformity.

The fact, also, that this is a force which is entirely under the control of the patient and from the action of which she may relieve herself at any moment by placing her feet upon a stool, thus relieving the extension, is one of great importance. When a force, as by screw-power, is operated by the hand of another, the patient, unable to obtain relief when such is desired, does not yield as readily, relaxing her muscles; and the acting force has less freedom to accomplish its purpose. The contrast here is summed up between the words, "freedom of action" and "compulsion."

3. Rotatory mechanical force. The understanding of the application of this force may be aided by the examination of Fig. 3. A very simple stand or bench is made, having two horizontal portions well padded, upon which the shoulder and pelvic girdles lie. These horizontal resting-places can be brought closer together for smaller individuals and carried farther apart at will. From a bar running parallel with the body, and at a higher plane, is carried a strap about three inches in width and ending in a bag, into which iron weights may be placed up to the extent of one hundred pounds. This strap, between its point of attachment to the bar above referred to and the bag containing the weights, is permitted to press upon the prominent angle of the ribs on the convex aspect of the deformity in such a way that two elements of force are acting, the one a lateral force, and the other vertical in the direction of gravity, and therefore pressing the prominent ribs forward. As the bar is stationary and the bag of weights is tending constantly downward, a rotatory result is brought about, tending directly to correct all the elements of the deformity. The use of this machine implies the presence of an attendant, so that the force may be increased up to the point of endurance and so that the patient may be set free when the limit of endurance is reached.

4. Forceful evolutions. This I find somewhat more difficult to describe. There are a variety of free movements. (1) While

suspended by straps passing under the chin and occiput and raised several inches above the floor, the patient holds a rope parallel with that by which she is suspended, and by its aid makes vigorous circumductory movements of the body, carrying the spine rapidly and repeatedly around in such a way as to greatly increase the suppleness of the column. (2) The same means that have been employed for suspension are employed again, so that the space between the floor and point of suspension is probably a foot less than the height of the patient. Placing the feet firmly on the floor, she now leans forward and proceeds to circumduct the body between the two relatively fixed points, these being the feet upon the floor and the suspension straps under the head. The body is thus circumducted for about ten circles to the left and then ten circles to the right. This again, as in the various other movements described, serves as a very vigorous massage to all deeper structures and as a stretching force acting especially upon the shorter ligaments of the concave side of the spine.

5. Force exerted by the patient's own hand. This is much less powerful, but is readily applicable, and will be frequently employed by a patient who understands its efficiency and whose interest and coöperation have been elicited. The patient must be taught how to do this standing before a mirror. The hand upon the convex side of the deformity should be carried well upward and backward so that the "heel of the hand" is made to press forcibly upon the ribs, directing the force lateralward and, as much as possible, forward.

6. Force employed while sleeping in bed. The use of the Bradford frame in the treatment of Pott's disease is well understood. If the side bars of the frame be bent to an extent of fifteen, twenty, or even thirty, degrees at a suitable point, the patient may lie upon the frame in such a way as to make hyperextension at the point of chief deformity (Fig. 4.) Several modifications, however, are to be added to this Bradford frame in order to render it efficient. A bracket, or rod, is to be attached at the head end of the frame, and straps for suspension are employed so that as the frame is placed in an inclined position the body-weight maintains constant extension (Fig. 5.) In addition to this, a steel spring is arranged upon the cot so as to make constant pressure against the prominence of the ribs on the side of the convexity, pressing this constantly in two directions, lateral and forward, as before explained, giving a resultant force which is rotatory. To increase this corrective force, the bracket at the head of the frame

is not situated midway but placed further toward the side of the convexity; also a girth passes around the pelvis pulling toward the same side. This frame, so adjusted, I have found a most effective means for dealing with the deformity in infants and young children, who sometimes manifest the condition in an exaggerated degree at a time when it would be difficult or impossible to employ all or any of the foregoing agencies. I may be permitted at this point to recite the following case:

K. G., six months old, presenting a strongly marked curvature at birth, a somewhat delicate child, but otherwise normal. The cot, as modified by the rib-presser described above, was employed continuously for six months. When it is said that it was employed continuously, it is to be understood that the child during this time was never in the upright position, even when nursing, being bathed, or clothing being changed. Day and night the child lay on the cot, or frame, as described. Little difficulty was found in so using the cot as to over-correct the deformity in a child so young. After the first six months the child was allowed to learn to walk and to be free from the cot, only a few hours each day. At the end of another six months the child had learned to walk fairly well and was found to be very erect. There was no criticism that could be made of its attitude. The child is now six years old, still sleeps for some hours out of every twenty-four upon her cot, and the correction is fully maintained. Her general attitude as she moves about is one of erectness of carriage.

Developmental treatment. Not much need be said upon this division of the subject. It is universally conceded that systematic, muscular exercises, within physiological limits, favour growth in size, power, and efficiency. Not in all cases but in many, the muscles of the patient need to become stronger in order to be able to meet their responsibilities. The increase in size, power, and efficiency of muscle, however, is not the most important desideratum.

Educational. The educational is the most important factor in the treatment of spinal curvature, and the most neglected. It is human to want to follow along the paths made familiar by habit, and for the patient to allow herself to go in the lines of least resistance. This natural tendency must be overcome. The patient must be instructed, wrong attitudes pointed out and correct ones shown. For this purpose, large mirrors should be employed, showing the figure from all points of view. The patient is in this way enabled to form a correct judgement—learns what is a faulty attitude and what a correct one. She will at this point, if wisely treated, show a helpful, intelligent interest in her own case, previously non-existent, and now she is ready to give what is essential to success, a cordial coöperation.

Under wise and tactful guidance, a patient, whose time reaction at first is distressingly slow, will show largely increasing interest and promptitude of action; one who allows the body to droop negligently into a bad posture, evincing no forceful purpose, will learn to assume an energetic bearing indicative of a newly created ambition to reach an ideal. The first goal placed before the patient is the erect attitude—the most nearly correct one for her—which she saw herself assume while being instructed before the mirror. In the effort to attain this her will is cultivated and strengthened, her appreciation of correct attitudes and movements is heightened. Her efforts are stimulated, not only by the guidance of a tactful director but by the example of others doing the same work by her side and aiming to attain the same results. To reach these educative results, certain conditions are essential. The instructor or director must be truly interested, enthusiastic, and tactful. If her duties are summed up in "doing" a certain list of exercises in a perfunctory manner, then her presence is a hindrance and not an encouragement. She must be able to make clear and attractive the ideal to be attained. It must appear an important one worthy to be striven after. The work, in nearly all cases, will grow monotonous and irksome if done alone; several—six or eight—working together to attain the same result stimulate each other by emulation and example.

While the exercises, for the most part, should imply work requiring effort and concentration of mind, yet games and play which will break up monotony and take the self-centred ones "out of themselves" should find a prominent place.

Mechanical force, directly and intelligently employed for short periods to force a deformed thorax into erectness and symmetry, should alternate with free exercises and games. The work should be so arranged as to afford a true physiological succession, so as not to exhaust nor unduly weary any one set of muscles or organs. This principle is well set forth in Swedish gymnastics. Systematic daily drill should continue till the maintenance of an ideal attitude of erectness ceases to demand constant concentration of effort, but becomes spontaneous. The time required to attain this standard must depend much upon the individual patient and upon the thoroughness with which the foregoing directions are followed out.

Our responsibility. In meeting our responsibilities relative to these patients it is our duty to ask ourselves what we hope to accomplish, what is the most valuable service which we can render? The parents, the patient, and the surgeon, are likely to fix attention upon the one subject, the deformity of the spine, with the purpose of lessening or curing the curvature, forgetting that the patient is of greater importance than the deformity, that improvement of her respiratory power and of her cardiac efficiency is a work of much greater value than is the lessening of the degree of the curvature.

It would seem that in the class of curvatures which may be described as simply postural there can be little ground for debate. It is in cases where marked bony changes have occurred and where there is fixed deformity that there would seem to be justification for employing forcible mechanical means for correction and afterward for maintaining the correction. Even if it were granted that less correction of the actual deformity was accomplished by the methods here advocated than by the use of rigid and forceful constricting jackets or braces, yet I would prefer it because of the incidental advantages in the way of thoracic development, increased mental and physical alertness, improved muscular efficiency, and a general gain in healthful vigour.

Confinement in braces and jackets, on the other hand, produces atrophy, not only a lessening of muscular size and power but actual changes in bone. I need only recall the fact that a leg which to-day can successfully resist a certain breaking force will yield readily and be broken by the same amount of force after a few weeks' confinement in a fixed dressing of plaster-of-Paris. Where muscular efficiency is below par, and where habits of incorrect attitudes are present, is it wise to adopt a method of treatment whose tendency is to increase the evils?

Further, I am not prepared to admit that the so-called structural scolioses cannot be modified and greatly improved by the application of "short-time" force, followed at once by educational physical training. Patients who have crural asymmetry, so that one lower extremity is an inch shorter than its fellow, may learn to assume and maintain an attitude closely approximating ideal erectness (Figs. 6, 7, and 8).

A trunk at first not only deformed but rigid, becomes supple and yielding after the daily application of force used for a short time. In this condition of increased mobility of the spine, careful instruction before a mirror should be given and continued until the patient understands what attitudes are faulty and what is a correct

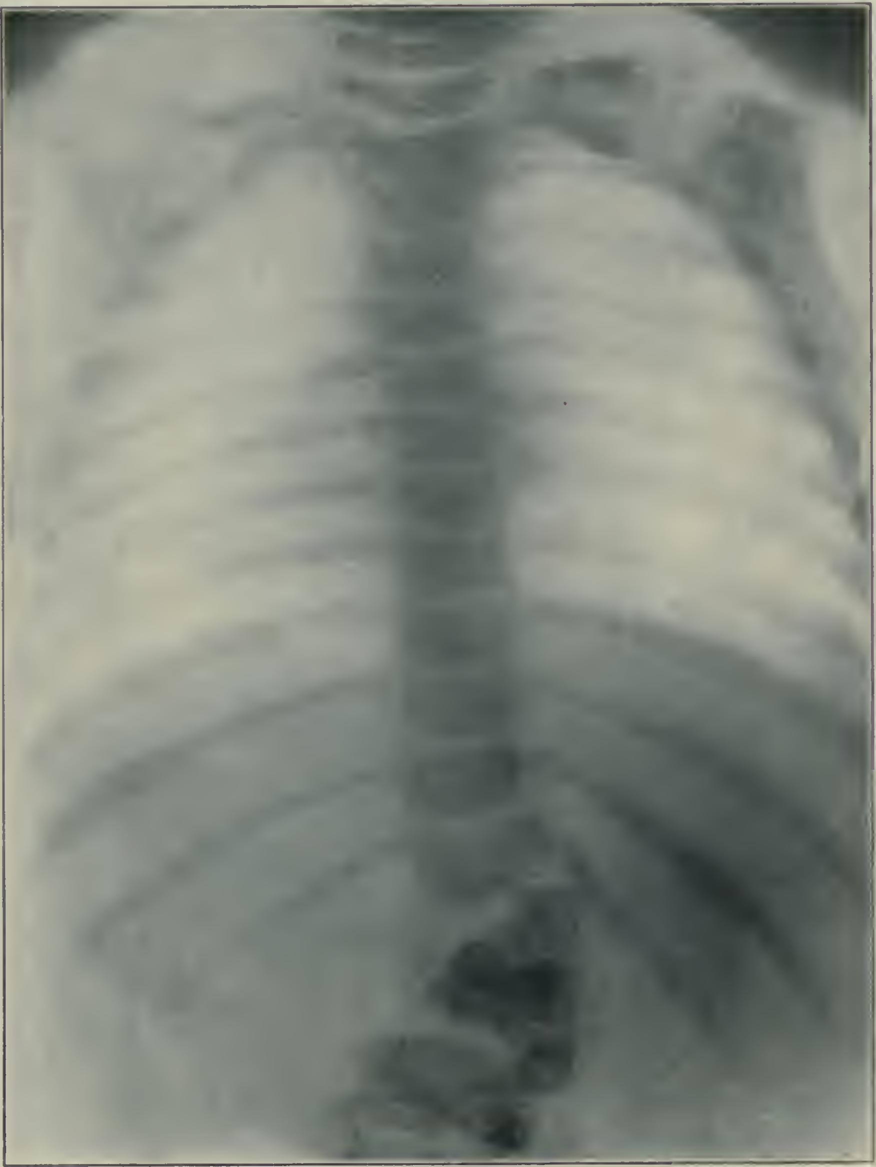

FIG. 1.—Congenital defect of the lumbar vertebræ causing marked scoliosis at five years of age.

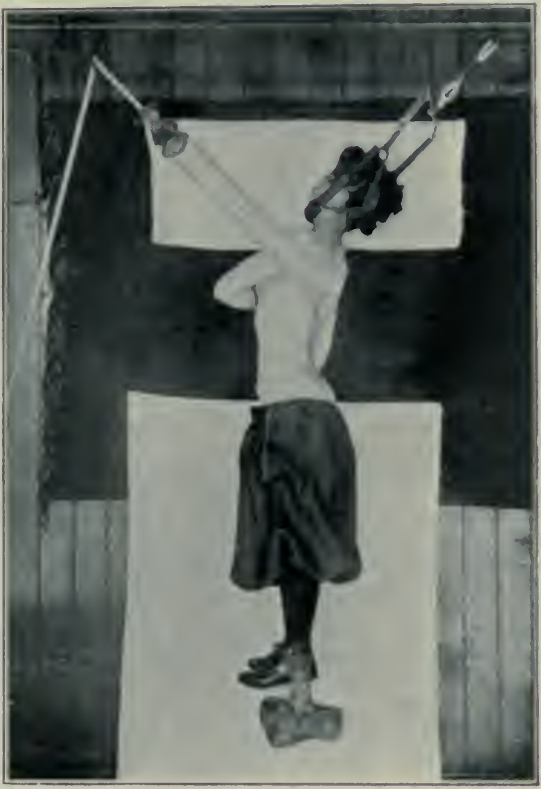

FIG. 2.—Extension with side force, so as to make rotation at the same time as lateral pressure is made.

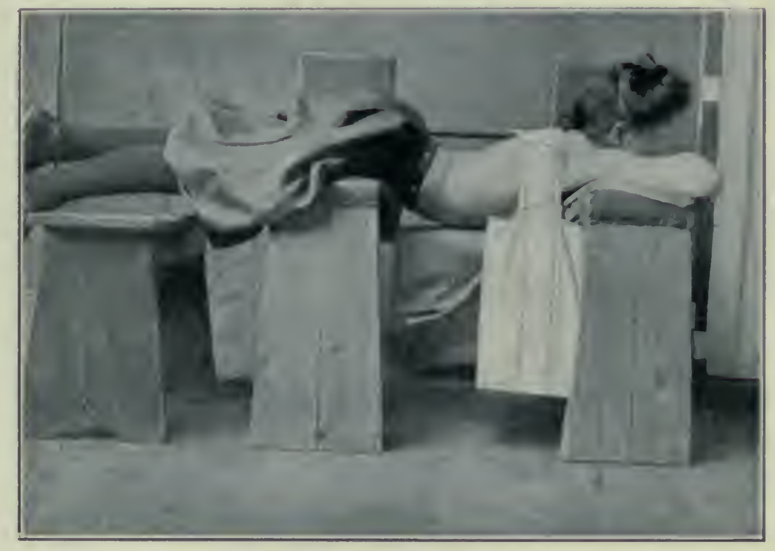

FIG. 3.—Strap suspending weight—bag presses only on the prominent ribs, while shoulders and pelvic girdles are held in fixed position.

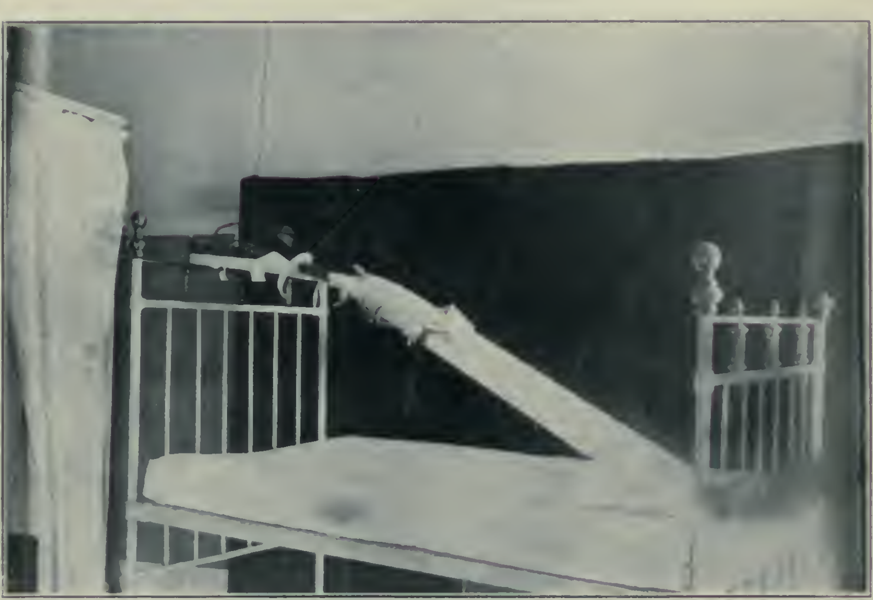

FIG. 4.—If the steel "rib-presser" presses the body toward the left, then the head-straps pull the head toward the right, and the girth passing around the pelvis pulls also toward the right.

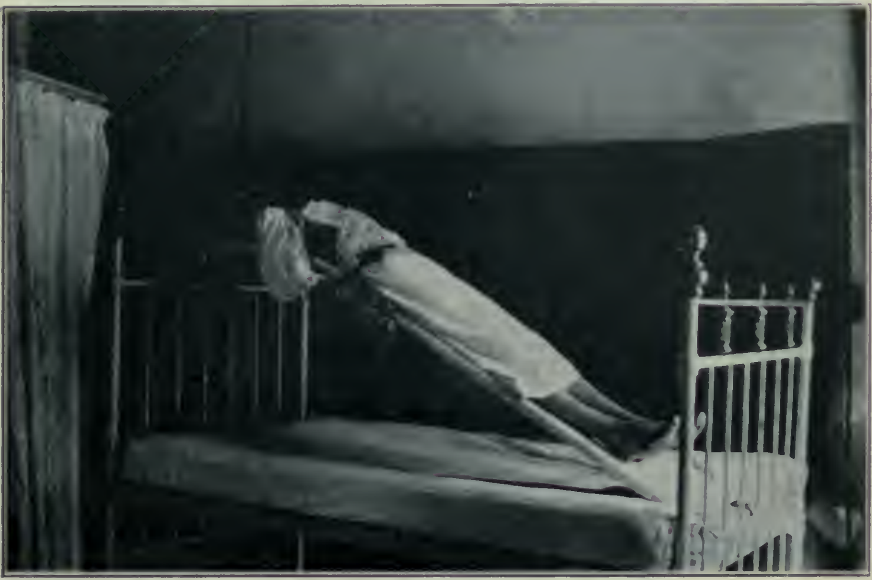

FIG. 5.—Lying on extension cot, rib-presser at right side, pelvis and head both pulled in same direction.

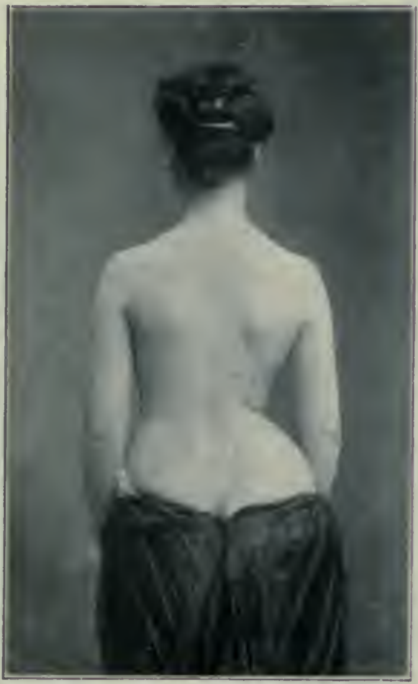

Fig. 6.—H. C., twenty-two years of age, pelvis droops three-quarters of an inch on left side.

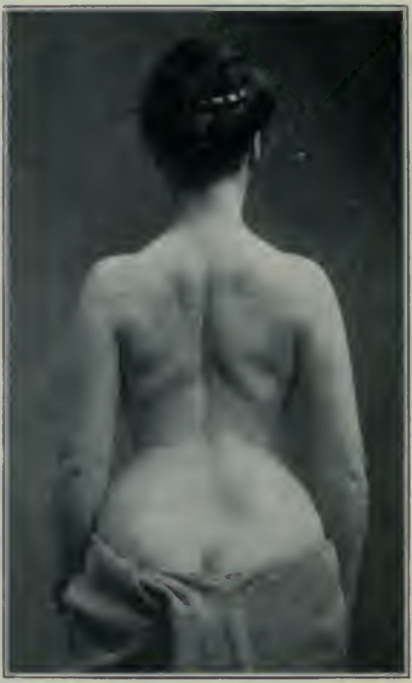

Fig. 7.—H. C., after three months' training, and having three-quarter inch cork under left foot.

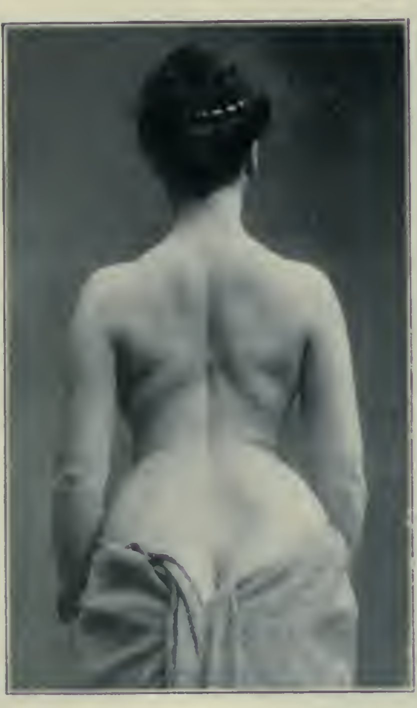

FIG. 8.—H. C., after training, but having no cork under foot.

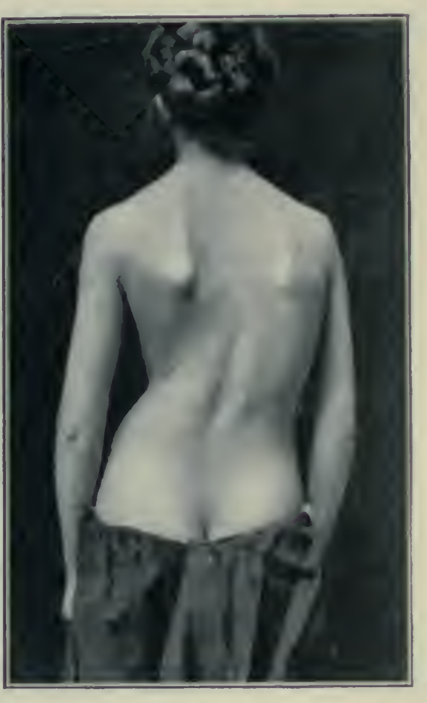

FIG. 9.—A. B., fifteen years of age, October, '09, standing in attitude habitual at that time.

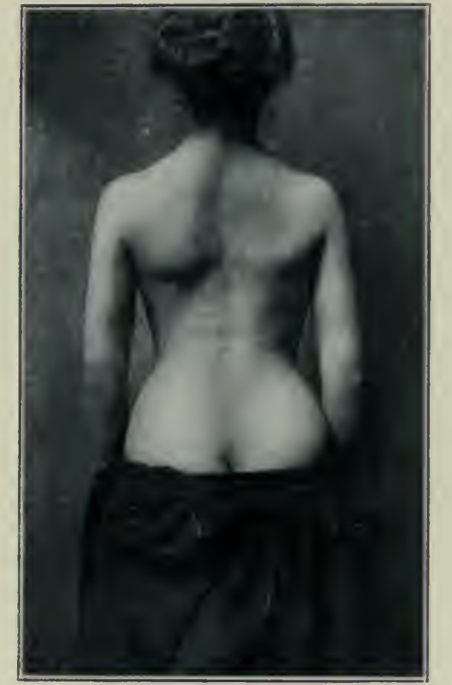

FIG. 10.—A. B., May, 1910, after seven months' training.

bearing. Practice in various gymnastic movements should follow, always in such a way that the patient centres about the attitude admitted to be the most nearly correct for her (Figs. 9 and 10).

Forced breathing exercises have an important influence in correcting thoracic deformities. This fact is admitted by the advocates of constrictive mechanical means, in as much as they free the flattened parts of the thorax from pressure by cutting away the jacket at that part, and they increase the pressure where the bony thorax is prominent. Without such constriction, a similar result will follow, though more slowly, but without the harmful consequences in the way of atrophy, not only to muscles and bone but to will power.

That much may be accomplished by training, even when the curvature is due to inequality in the length of the legs, may be illustrated by the following: M. P., a young woman nineteen years of age, with a strongly marked deformity which was caused partly by asymmetry of the lower extremities, and which had existed for a number of years, was treated by gymnastic training and by having one inch of cork placed under the shoe worn upon the shorter limb. After several months of work she gave up the elevated shoe and maintained, almost perfectly, her improved attitude.

The one method, by the use of forcible, repressive, mechanical means, impedes growth, hampers the development of important vital organs, favours reliance upon supports, stands in the way of cultivating a graceful ease and energetic bearing, discourages the growth of personality; the other, in every phase of the work, not only corrects deformity but tends to an increase of strength, added muscular development, increased oxygenation, improved cardiac tone, and begets self-reliance, self-mastery, and a conscious independence of artificial aids.

INTERNAL HERNIA: WITH A REPORT OF A CASE OF MESOCOLIC HERNIA

By Jasper Halpenny, M.A., M.D.

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THOUGH retroperitoneal and other forms of internal hernia are rare in comparison with some intra-abdominal surgical conditions, and rare also when compared with inguinal, femoral, and ventral hernia, they are, nevertheless, of sufficient importance to merit discussion. One of the reasons for the importance of attention to them lies in the fact that many of the cases are ushered on the scene by symptoms of acute obstruction. Operation for such a condition, with the patient usually in a serious condition, may be baffling in the extreme. The prolonged search for the cause of obstruction may be the cause of additional shock, sufficiently severe to cause a fatal termination. An orderly review of the probable places for an obstructed hernia, instead of a somewhat haphazard search of the whole abdomen, with possibly an almost complete evisceration, may avoid this additional shock.

Taking Moynahan's exhaustive monograph on retroperitoneal hernia as a guide, the chief forms of internal hernia may be said to be these: left duodenal, right duodenal, mesocolic, hernia into the retrocolic fossa, into the intersigmoid fossa, into the foramen of Winslow, and, lastly, into the lesser sac through an abnormal aperture. For the anatomy involved in these various hernia the author is indebted to Moynahan's valuable little book.

Left duodenal hernia occurs into the fossa of Landzert. This fossa is situated to the left and some distance from the duodenum. It is caused by the raising up of a fold of peritoneum, the plica venosa, by the inferior mesenteric vein. The orifice of the sac looks downwards and to the right; the blind extremity is directed upwards and slightly to the left. This form of retroperitoneal hernia is probably the most common.

Right duodenal hernia occurs into what Moynahan has named the "fossa of Waldeyer." "This fossa lies within the cavity of the

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arch formed by the superior mesenteric artery; its orifice looks to the left, its fundus to the right and downward. Behind it are the lumbar vertebræ covered by peritoneum."

Mesocolic hernia occurs into the mesocolic fossa, which is formed by a fold containing the ascending branch of the left colic artery. "This fold forms the anterior border of the fossa, which extends to the left between the layers of the transverse mesocolon in the direction of the splenic flexure." This is a rare form of hernia.

The retrocolic fossa lies behind the cæcum and the lower part of the ascending colon. Its orifice points almost directly downward and the fundus extends upward in the direction of the kidney. Of this form of hernia Moynahan cites only seven cases reported up to 1906.

The intersigmoid fossa is formed by the two layers of the mesocolon of the sigmoid flexure. The orifice points downward and the fundus upward. The iliac artery lies behind, covered only by the posterior peritoneal wall of the fossa. The sigmoid artery lies above and to the right. Treves[1] estimates the frequency of the fossa as occurring in eighty-four per cent., and Moynahan in seventy per cent., of all bodies examined. Only two authentic cases of hernia into this fossa were reported up to 1906, according to the judgement of Moynahan. These were reported by Eve[2] and Eccles.[3]

Hernia through the foramen of Winslow is more frequent than many of the varieties already cited. From a review of twelve cases reported in the literature, Moynahan attempts to outline the symptoms of this variety and says: "In a typical case we should expect to find acute intestinal obstruction, with intense, almost intolerable, epigastric pain, with epigastric prominence or tumour, such prominence being dull on superficial, slightly resonant on deep, percussion. It is interesting to note that there are no recorded symptoms of pressure on the hepatic artery, portal vein, or bile duct. It may be noted that in the case of Neve[4] the symptoms were those of subacute obstruction."

Of the last form mentioned in the list, namely, hernia into the lesser sac through an abnormal aperture, Stolzenberg,[5] writing in 1910, reported a case, and reviewed those already reported. He found the following: Deville,[6] Boettcher,[7] Schwalbe,[8] Ihsecke,[9] each one case, and Ackerman[10] one of his own and three others collected from the Swedish literature. These, with two reported by W. J. Mayo[11] and the author's case, make twelve in all. Reference might be made here to Blandin's[12] case, where, at autopsy, "a large segment of the small intestine had entered the foramen of Winslow; a portion of this segment left the lesser cavity of the peritoneum by an opening in the transverse colon. At this point the gut was strangulated."

Stolzenberg's case was an autopsy of a thirty-seven year old man who had suffered for ten years from digestive troubles. There was a suspicion of malignancy and the patient was sent to the hospital, but died before operation was performed. The autopsy revealed a hole in the transverse mesocolon through which a section of the terminal portion of the ileum, and a loop of the jejunum, escaped. The rest of the small bowel had passed through the opening. A little of it remained in the lesser sac. There was a tear about four cm. from the margin of the gastro-hepatic omentum, however, through which the greater part of the small intestine had passed and was again lying in the abdominal cavity.

Mayo's first case, a female aged fifty-nine, gave a history of indigestion for fifteen years. Pain three or four hours after meals was associated with eructations of gas and sour fluid. Vomiting was frequent latterly. "Several times she had vomited food known to have been eaten a week previously." At operation it was found that there was an opening through the transverse mesocolon and one through the gastro-hepatic omentum through which the small intestine had passed and was found lying in front of the stomach. There was a duodenal ulcer present.

The second case was also a female, aged thirty-two, who, since she was seven years of age, had attacks of gastric pain. These attacks had no constant relation to food. At operation there was found a tear of the transverse mesocolon through which five feet of intestine had passed. This presented above the stomach as a tumour covered by the gastro-hepatic omentum. There was a perforated duodenal ulcer.

CASE REPORT. Mrs. C., aged twenty-eight, entered the Winnipeg General Hospital, May 20th, 1912, and was discharged June 10th. Except for the history of indigestion, there has been no illness worthy of note. Her complaint of "stomach trouble" commenced at about the age of fourteen years. Since then the illness has come in distinct attacks, during which she would have a great deal of pain and discomfort. Between attacks she would be quite well, and could then eat anything desired. For some years these attacks came on only in the spring and fall. During the summer, particularly, she felt entirely well. As the years went on the attacks came closer together and lasted longer, till, during the last year or more, she has not been entirely free from trouble at any time. She thinks that the attacks were sometimes precipitated by overwork.

Her chief complaint was pain, which was described as burning. It came on one to one and a half hours after taking food. This was accompanied by eructions of gas and sour fluid. It was relieved by taking food in any form. She says that solid diet gave freedom from pain one to two hours longer than did liquid diet. Latterly the pain was felt through to the back over the twelfth rib. The severe attacks were relieved by lying across a pillow. Vomiting has been a prominent symptom. It has been present almost since the trouble began. At first it would occur at any time during the day when the pain became bad. The vomiting always gave her immediate relief, which continued until after the next meal. In the early years it consisted of sour liquid; blood had been present for a number of years, but the patient was not clear as to how long. During the last five years the type of vomiting had gradually changed, both as to time, quality, and quantity. At the time she came under our observation she vomited regularly once a day and about the same hour, namely, after the evening meal. At this time she would vomit all the food taken at the last three meals, and all quite undigested. Blood had been present in larger quantities. It frequently came at the end of a vomiting spell, and then quite red. The vomiting of three undigested meals each evening was the outstanding symptom, in the eyes of the patient, at the time she entered the hospital. She had been habitually constipated. Nothing had ever been seen in the stool which she took for blood. For years she had slept on the left side, feeling very uncomfortable when lying on the right.

On examination, the patient was not as emaciated as one would expect from the history. In the evening after supper she was given some rice and raisins. Before breakfast the stomach was emptied of one ounce of thin, milky fluid containing rice and raisins. It showed free HCl, none; lactic acid, a trace; blood, none; total acidity, 10. She was then given a meal of toast and tea. Forty-five minutes later the stomach was emptied of three ounces of thin fluid containing fine granular material. There was no free HCl, no lactic acid, and no blood, the total acidity was 20. Her blood examination showed hæmoglobin, 60 per cent.; red blood cells, 5,500,000, and slight poikilocytosis. The colour index was 0·6. There was no occult blood found in the stool. Palpation of the abdomen revealed tenderness over the whole pyloric region. The stomach was prolapsed; no mass was felt.

From the foregoing history it was evident there was some obstruction to the outlet of the stomach. This was thought to be due to duodenal ulcer, but a diagnosis could not be made which would account for the later history. An exploration was advised.

The operation was performed with Drs. Guest and Gorrell assisting. An incision was made through the upper end of the right rectus. The liver was found one and a half inches lower than normal. The fundus of the gall-bladder was adherent to the transverse colon, the duodenum, the stomach, and the liver. There was an old, healed ulcer of the duodenum. The stomach was prolapsed, the pylorus being almost as low as the umbilicus. The cæcum was easily drawn into the wound, when a chronic, adherent appendix was removed. Further examination of the stomach revealed the fact that there was a perpendicular tear in the transverse mesocolon and the gastro-hepatic omentum. Through this all the small intestine had passed from behind forward, except the proximal three inches of the jejunum, and the terminal six inches of the ileum. The transverse mesocolon and the gastro-hepatic omentum were fused, so that the lesser sac was obliterated. The stomach lay so low that the jejunum came straight forward from its origin over the lesser curvature of the stomach. The stomach was unduly U-shaped. The intestine was not obstructed at any point. The gut was all replaced and the aperture closed.

The duodenal ulcer had not materially obstructed the pylorus during healing, therefore gastro-enterostomy was not done. The adhesions about the gall-bladder took the form of a distinct membrane with perpendicular bands of fibrous tissue. It was abundantly supplied with blood vessels. It extended down the right side to the ascending colon, but did not involve the cæcum, as originally described by Jackson. No lesion was found in the stomach. The adhesions above referred to were carefully tied off. No gall-stones were present. The patient made an uneventful recovery and left the hospital on the twelfth day.

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THE HEART DURING SOME ACUTE INFECTIONS

By W. F. Hamilton, M.D.

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THE severity of an infection, making allowance for the age of the patient, is often estimated only on a careful examination of the heart; while the fatal termination in many acute diseases is rightly ascribed to failure of the circulation.

Within very recent years much that is illuminating has been gained from the new method of studying the circulatory system, and for phenomena hitherto obscure and perplexing better explanations have been found. In the light of the new teaching, added interest centres about the clinical observations of all cardiac conditions, and as a result the treatment of disturbances of circulation, whether induced by disease of the heart itself or by toxins resulting from an acute infection, is placed upon a much more satisfactory basis. In his address on cardiac failure recently published, Sir Clifford Allbutt shows how indefinite, how inconstant, how obscure are the symptoms and the signs of myocardial inefficiency viewed from the clinical standpoint, while he points out at the same time that there is the want of parallel and of apparent correlation between the physician and the pathologist. In many cases the physician cannot tell when the heart is about to fail; the pathologist cannot detect the cause of its failure, nor, on the other hand, can he explain how the heart has gone on so long. One cannot question the truth of these statements, yet it must be admitted that it is not a complete statement, for without doubt a correlation between the physician and the pathologist is more and more definite in matters pertaining to disturbances of the circulation.

Whether the physiology or the pathology of the heart is under consideration at the present day, the heart muscle receives the chief attention. The heart beat is myogenic. Pulse irregularities of serious significance originate in that structure, and in the majority of cases heart failure is explained by cardiac dilatation.

The heart, during infection, may be the seat of changes, inflammatory or degenerative, localized or diffuse, with the endocardium, myocardium, and pericardium separately or collectively involved. Again, the neuro-muscular mechanism may be disturbed by the fever and the toxins, or the heart may be affected as the result of changes largely peripheral, or, as Allbutt says, "There may be a dissociation from its peripheral complement, a loss of tone in the 'peripheral heart' so that it beats the air in vain."

Needless to say, it is a matter of nice diagnosis to estimate these factors in the altered circulation incident to fever and toxæmia, and to place a right value on that factor, or those factors, threatening in a given case. We know that rheumatic infections are common in the various structures of the heart, inducing pathological changes more or less permanent. To influenzal infection has been ascribed a number of cardiac sequelæ, while cases of pneumonia, diphtheria, and typhoid fever terminate in cardiac failure, sometimes satisfactorily explained by the careful pathologist by the anatomical lesions found.

The graphic method enables one to detect a few important conditions which might otherwise pass unnoticed, and all that is new in the examination of the circulation has served but to interpret the older and simpler methods through which the main circulatory disturbances may be recognized. We judge the heart largely now, as hitherto, by the rate, the rhythm, and the pressure under which it does its work. A diagnostic value attaches to the rate of the heart in acute infectious diseases. The slow pulse compared with the high temperature in typhoid fever and the very rapid pulse of pneumonia and scarlet fever serve as illustrations. A continued high pulse rate, or a sudden slowing of the pulse in any case, is ominous.

Departures from the normal rhythm of the heart and pulse find new interpretation by the graphic method which aids so much in teaching. An altered pulse rhythm is a prognostic sign of some worth, and according to its type one may know something of the changes taking place in the heart.

It is a general rule that the *blood pressure* falls considerably below normal in all acute infections. The tonic action of the vasomotor centre is diminished, the arterioles are dilated, the vasomotor centre may be paralyzed. The myocardium may be diseased, the heart dilated. As the heart—the left ventricle—and the peripheral resistance are the chief factors in keeping up the blood pressure, it is not difficult to find an explanation of the low pressure usual in uncomplicated cases of acute disease. Recent investigations tend to explain that the low pressure of infectious states is brought about by the action of the poison of the disease on the functions of the adrenals diminishing the secretion. So marked is the lowering of the blood pressure when a circulatory failure supervenes early in the disease, that vasomotor and not myocardial conditions explain the result. As it has been aptly expressed, such a death is glandular rather than myocardial. Later on in the course of the disease there is the added condition of definite myocardial disease so often demonstrated, by which the other important factor in maintaining blood pressure, the left ventricle, is diminished in value.

When one examines the chief points brought out by the graphic method alone concerning the heart muscle and the circulation while influenced by acute disease, it must be admitted that there are but few signs of importance. There are two tracings, however, which must be mentioned; first, that showing delayed conductivity or partial heart-block; and secondly, that of the pulsus alternans. It is only by this method that these pulse irregularities can be detected. The former is discovered quite frequently. Already several cases with autopsies are reported of depressed conductivity in the acute infections, such as diphtheria, pneumonia, etc.

An alternating pulse is rarely described in such cases, yet it should be sought oftener, as a depression of contractility is an important prognostic sign, and like those cases of depressed conductivity may be revealed in its less pronounced form only by the graphic method. We should then supplement our old and well tried methods of examination, including auscultation, with the graphic method where possible, at the same time observing more frequently the blood pressure in both the systolic and the diastolic phases.

Once more let me lay stress upon the necessity of carefully observing the three points—rate, rhythm, and blood-pressure—in estimating the disturbance of the circulation. It has been pointed out already that vagus hypertonicity due to a recent infection may account for the slowing of the heart after a febrile attack. Further, as heart-block may be experimentally induced by vagus stimulation, it is thought that those cases of partial or transient depression of conductivity may be ascribed to the same cause. Or they may be explained even more readily by considering that the conductivity is inhibited by toxins acting directly upon the conducting muscle fibres. Such changes account for altered rate and altered rhythm.

The rhythm of the pulse, however, during the febrile state is usually regular. A pulse at other times irregular loses this quality during fever. It is rare to note the pulse in a state of arrhythmia during the course of typhoid fever. Even the fatal cases lack this sign until very near the end. Irregularity of the pulse due to extra systoles of the heart occurs as a result of infection, though, as an immediate result of infection, it is rare. "It is not advisable to neglect them entirely as they give some evidence of disturbed mechanism," says Lewis. Cardiac irregularity of the juvenile-respiratory type, or so-called sinus irregularity, is common in children and signifies nothing abnormal. It is found frequently after fever in acute infections in children, and it has been described as present during the febrile attack. Vagal influence, absent in health in the adult, may be active once more in disease. Cases illustrating this feature have been observed in convalescence.

Of all the clinical signs indicating myocardial mischief, the rate of the heart beat must be given first place. The pulse may be very slow. This is the exception. The pulse is usually high in proportion to the fever, allowing ten beats for each degree of fever, according to a reckoning often referred to. Myocardial changes may be suspected if the rate exceeds this proportion for any length of time. This suspicion is deepened if to the constant high rate there are added periods of yet more rapid heart beats with cyanosis and restlessness. The explanation of these so-called "runs" of the pulse, or "heart slumps," as I have called them, is either dilatation of the heart or vasomotor paresis, or both. The heart is sometimes found dilated; the blood pressure is low; sweating is common, and the surface dusky. An increase in the precordial dulness, weakening of the sounds, reduplication, with or without cardiac murmurs, are all signs to be reckoned with in the evidence for or against myocardial mischief.

A few observations of the pulse and heart in pneumonia may be found of interest. A sudden drop of the pulse rate from 110 to 48 with no serious after-results was recently observed in two patients. Irregularity in the pulse, regarded by McKenzie as an ominous sign, has been followed by recovery on several occasions. On this subject McKenzie relates his experience in these words, "'In all cases of acute lobar pneumonia that I have met when the pulse showed an occasional irregularity before the crisis was reached, death supervened." Hyperdicrotism preceding death was noted in one case.

Examples of post mortem results found in the hearts of those dead from pneumonia showing dilatation are not uncommon. Dr. Percy Kidd in the London *Lancet* of recent date states that the post mortem examination of the heart in cases of pneumonia is striking on account of the almost invariable absence of dilatation. The heart muscle seldom shows any gross disease, and this suggests that fatal circulatory failure is mainly due to exhaustion of the vasomotor centres. We have gone over several autopsy reports, and have found—right auricle dilated; tricuspid admits five fingers, or four fingers; muscle fibres swollen; striation obscure; vessels congested; numerous thrombi composed of diplococci among the muscle fibres; fat globules in papillary muscle—among the pathological findings.

The typhoid cases which have been selected illustrate a few of those serious features of disturbed circulation above enumerated. That there may be no sign whatever of approaching danger and but little post mortem evidence explaining the death, is illustrated in one of our cases. The patient was a male, forty-five years old. The pulse was not rapid (80 to 100), and the heart sounds were clear. On the thirty-second day of the illness which to this date had progressed without event, while his temperature was yet between 98·5 degrees and 99·8 degrees, he complained of pain over the upper part of the sternum; the heart's action became irregular and weak, and he died within a few hours. The post mortem showed a small pericardial effusion. The heart was dilated, yet not conspicuously so.

In contrast to this case the main points in three other cases of typhoid fever may be recorded.

Case 1. No. 15854. Male, aged twenty-two. Admitted on the twelfth day of disease with pulse of 118, regular and of fair tension. On the sixteenth day, the pulse was 124 to 140, of low tension and diminishing volume. A systolic murmur was heard for the first time at the heart apex. On the nineteenth day the second sound was reduplicated, the pulse 120 to 130; twenty-second day, pulse 140 to 160, weak; twenty-third day, death. The post mortem showed myocarditis, with cloudy swelling of the adrenals.

Case 2. No. 14360. Male, aged twenty-five; admitted early in disease with pulse of 86. No cardiac enlargement and no murmurs. The pulse rarely reached 100. The blood pressure was 110 to 98. On the fifteenth day of the disease, a mitral systolic murmur was heard. On the twenty-fifth day the temperature was subnormal. On the thirtieth day, after a week without fever, the patient died. The post mortem showed cardiac dilatation, with dilatation of the tricuspid and mitral orifices; and cloudy swelling of the heart muscle.

Case 3. No. 16693. Male, aged twenty-two. Early in the disease the pulse was 88. On admission there was an apical systolic murmur. Towards the end of the third week the pulse showed numerous "runs," during which it was almost impossible to make out the rate. The patient was restless and often drenched with perspiration. The blood pressure ranged from 110 to 120. Death came on the twenty-fourth day. The post mortem showed dilatation of the heart chambers, fatty changes in the papillary muscles, and an acute verrucose endocarditis of the mitral and tricuspid valves.

Slow Pulse Rate. A young student ill with typhoid fever of mild type showed during the febrile period an extraordinary pulse rate of 48 per minute. It was thought that partial heart-block, due to the active infection, might explain the slowness of the pulse, but a careful analysis of the tracings by Dr. Moffatt failed to support the suggestion. A similar condition supervened in a youth of twenty years of age, two days after defervescence from typhoid, during the course of which the pulse rate had seldom gone above 90. On the evening of the twenty-second day of the disease the nurse, while counting the pulse, was struck by its small volume and a rate of 48 to 50 per minute. During the next two weeks the pulse rate ranged between 50 and 68, and on discharge a few days later, a record of 80 per minute was entered. He made no complaint.

Treatment. In all cases such as we have been considering, the indications are to lessen the toxæmia and to support the failing circulation. To carry out the second indication, due attention should be given in all cases to nutrition, fresh air, oxygen, and rest. Thus, to some extent at least, the depressing effects of toxins are diminished. The danger to the heart is from over-work, on account of the increased rate on the one hand and the weakening of the heart muscle on the other, while a yet greater danger threatens the heart and the general vascular system—vasomotor paralysis.

The present teaching is against the use of digitalis in acute infections, chiefly, however, it would appear, on account of its depressing action on conductivity. As there appears to be doubt cast by recent observers on the teaching that digitalis raises the blood pressure, its action upon peripheral vessels does not warrant its use.

The heart rate may be reduced by local applications of cold to the præcordium. Hydrotherapy often induces rest and sleep, and on this account it is to be recommended in the form of cool sponges, baths or packs. The cool pack or sponging tends to raise the blood pressure, yet this increase is temporary. One might be tempted to ascribe to the cold the good results of the treatment of pneumonia in the open air in our northern winters. Ballinger's observations on the effects of cold air on the circulation in pneumonia go to show, however, that while the pulse is slowed in a fair proportion of cases, the blood pressure is rarely increased while undergoing cold open-air treatment.

The drug treatment in these cases is far from satisfactory. Strychnin is in vogue, but there is but little experimental evidence to explain its use. I cannot point to a single case in which I have seen any result that could be attributed to the use of strychnin. The best of authorities teach that strychnin acts upon the respiratory centre, and as such a stimulant, it may indirectly aid the circulation. The use of alcohol in doses proportionate to the gravity of the case has much to condemn it. Alcohol is a vasodilator, and already the blood pressure is low and the heart rate too fast. Camphor and caffeine are much used and may be of temporary advantage.

The use of normal saline intravenously has been followed by a pulse of better volume and a blood pressure a few degress higher, and when to this adrenalin has been added, a more marked change has been noted in the blood pressure. From what has been observed while using saline and adrenalin, one may say they are agents for good, and yet at the same time there is danger of giving too much for the heart to do, by increasing the volume of the blood and constricting the peripheral vessels. Of strophanthin I have had no experience.

A SERIES OF CASES OF SMALL-POX, WITH SOME REMARKS ON DIAGNOSIS AND VACCINATION

By T. H. Whitelaw, B.A., M.B., M.O.H., Edmonton.

IN preparing a short paper on the above subject, anything I have to say will be practical, rather than scientific, based almost entirely on the experience gained during the last four years.

As a preliminary, a history of fifty-eight cases coming under my notice since January 1st of this year may be of interest. As regards age, they are divided as follows:—1 to 10 years, 7; 11 to 20 years, 8; 21 to 30 years, 20; 31 to 40 years, 15; 41 to 50 years, 5; 51 to 60 years, 2; over 60 years, 1. This indicates very clearly that no period of life is exempt to any degree, as is the case with many of the other infectious diseases. As regards sex, there were forty-three males and fifteen females. The preponderance of males is due to many factors, mainly to the greater opportunities for acquiring infection afforded males by reason of their associations and employments, and the great excess of males over females in the community.

Of the total, only five were school children, all of whom came from Edmonton South, where, previous to amalgamation, vaccination had been sadly neglected by the school board. In addition to these five, there were at least six more from the same part of our city, who had recovered before being discovered. In these cases the development of rash had been so slight as to cause the disease to be regarded lightly, and no precautions whatever were taken or quarantine imposed. In some cases it was regarded as chicken-pox, and owing to the general ignorance of the law which seemed to prevail concerning the disease, no report was made to the health department. It was only after these children had infected their unvaccinated parents and other adults, who developed the disease in a much more pronounced degree, that the true nature of the disease became apparent, and that through reports of physicians, sadly belated in many cases, the health department found it possible to deal with the situation.

Of the fifty-eight cases, eighteen were either from the south side, or due to exposure to cases walking at large there, and it is probable that as many more, principally children, had the disease and recovered without any report or quarantine. Fortunately the disease, especially in the children, was exceptionally mild, otherwise the toll exacted among the large number of unvaccinated children might have rivalled the epidemic of 1885 in Montreal, when of 3,164 deaths, 2,717 were of children under ten years of age. The carelessness and indifference of the school board in Strathcona in failing to exercise the authority given them by the provincial Health Act regarding vaccination of school children is most discreditable.

Too much credit cannot be given to the school board of Edmonton and to the teachers for the last four years, in so loyally and energetically backing up the recommendation of the health officer, and in furthering his efforts to effect a thorough and complete vaccination of the children attending school. For these four years not a single case of small-pox has occurred in a pupil attending our Edmonton schools, though many of them were exposed to infection on different occasions.

Of the total of fifty-eight cases, fifty had never been successfully vaccinated, though in a few the attempt had been made. Of the eight vaccinated cases, all had been vaccinated in infancy, and most of them had only one mark. None of them were under twenty years of age. Their ages were 62, 54, 41, 39, 35, 27, 24 and 22. Of these, only the eldest, 62, had the disease in a severe degree, and those aged respectively 41, 39, and 24, had the disease in so slight a degree as regards the rash, as to be scarcely recognizable. Indeed, in one of them, I was threatened with a suit for damages by an irate lady, who thought I had subjected her husband to great danger and hardship unnecessarily, and on a mistaken diagnosis. One of the eight, aged thirty-five, had an attack of very moderate severity, but unfortunately had a pustule on the cornea which has resulted in total blindness of the eye. Of these eight, the one aged twenty-seven, was not a case of small-pox in my opinion, but probably of syphilis. Of the fifty unvaccinated previous to the attack, three were vaccinated after exposure, but too late to prevent development of the disease, which, however, was greatly modified by the concurrence of the vaccination vesicles with the appearance of the true small-pox eruption in a few spots. These usually appeared on the face only, but in one—a boy eight years of age—the spots appeared only on the wrists. In these cases vaccination was effected six to nine days after exposure to disease. One school girl of fourteen was at first thought to have been successfully vaccinated, but further development of the vaccine vesicle showed it to be spurious. She developed the usual mild attack noted in the school children. The source of infection in the great majority of these cases is known, and indicates beyond a doubt that the infection in small-pox, just as in the other exanthemata, is chiefly derived from personal contact with the disease itself, and not communicated by carriers or from infected inanimate objects or things. If small-pox were as easily contracted as is popularly supposed, from air infection, and from contact with any article in a room through which the patient may have passed, or in which he may have stood, sat, or slept, and if all the elaborate directions as to disinfection and quarantine enjoined by the board of health regulations, which, owing to conditions existing in many cases, can be but imperfectly carried out, were justified by actual experience, there would be, after the lapse of time, only two classes of citizens in Edmonton: first, those protected by vaccination; and, secondly, those who had become protected by contracting the disease itself without falling into the hands of the undertaker.

As regards source, these cases may be classified as follows: Source unknown or undiscovered, 13; from the General Hospital case of January 19th, admitted as a case of grippe, 13; from some undiscovered case working at the McCauley Street school, 3; from the one of these three who subsequently developed the severe corneal ulcer referred to, 2; from untreated and undiagnosed cases in a family in Edmonton South, about February 20th, 15; from a case at the St. Elmo Hotel, undiagnosed by the physician in attendance, 5; from cases returned from Ontario, not completely cured and regarded there as chicken-pox, 3; from exposure to cases incorrectly diagnosed in a railway camp at Morinville, 3; doubtful case, probably not small-pox, 1.

In dealing with the different premises from which a case has been removed, I have followed the course of depending almost altogether on vaccination of the exposed persons, where not fully protected by recent successful vaccination and disinfection of the rooms to which the patient had had access, especially the bedroom, rather than that of putting on a rigid quarantine for sixteen days so frequently resorted to in dealing with small-pox. This latter, in my opinion, need only be resorted to when the individuals exposed cannot be depended upon to remain under observation from day to day during the development of vaccination. Daily visits by the health officer until all vaccinations have been ascertained to be successful or from fourteen to sixteen days in case any have failed to take on the first attempt, will in such cases quite sufficiently protect the public, without imposing any hardship or financial loss on the owner of the premises involved or its inmates. I am free to confess that I am possibly open to criticism in following this course, but I have yet to learn of any secondary cases which have resulted from following this method, and which could have been, or would have been, prevented by imposing the sixteen days' rigid quarantine, with ropes and special police thrown in.

In the diagnosis of this disease, the preliminary symptoms so closely resemble grippe or typhoid, that many of the cases in this series were regarded by their friends and relatives, and in some cases by their physicians, as grippe generally, and typhoid occasionally. When small-pox is present in the community, the initial chill followed by lack of appetite, nausea, or actual vomiting with severe headache, and more or less severe backache, pains in the limbs, and fever, should cause the physician to think at once of the possibility of small-pox, especially if, on investigation, it is found that the patient has never been vaccinated. If, after these symptoms, even a limited number of small red spots (in some cases two to a dozen) appear on the forehead about the fourth day, there should be no hesitation as to the diagnosis. The case should be regarded as small-pox, and in the interest of the public removed to the quarantine station or to the small-pox ward. If there is a shadow of doubt, the patient should be vaccinated as an additional safeguard. Hesitancy and delay in reporting such cases to the health office have been responsible for the majority of the cases in the series, and have cost the city of Edmonton very dearly during the last six months.

When the rash has appeared and is mild in character, and when the preliminary symptoms have not been very severe, the diagnosis from chicken-pox, especially in children or young adults, may be extremely difficult or impossible. If unvaccinated and over sixteen years of age, the case will, in the vast majority of instances, be found to be small-pox, and should be regarded as such if the public is to be protected. Again, the immediate vaccination of the patient should not be neglected as a precautionary measure. From the standpoint of a medical officer of health, it is not at all a serious matter to mistake chicken-pox or grippe for small-pox, as compared with the dire results which may follow to the community at large from failing to diagnose a genuine case of small-pox, and having it removed to a hospital as a case of grippe or typhoid. From the standpoint of the general practitioner, it is perhaps different, however, since he feels his first duty is towards his patient rather than towards the public.

As regards vaccination, the method I have found most satisfactory after performing the operation some five thousand times, is as follows: cleanse the area close to the deltoid muscle with alcohol, allow it to dry by evaporation, squeeze out one small droplet of glycinerized lymph in three spots, forming the angles of an equilateral triangle of approximately one inch to a side, then gently scratch through each droplet with the point of a sterilized needle, an area not more than one-eighth of an inch long by one-sixteenth wide, until the slightest tinge of colour appears, taking care not to draw blood. This method rarely fails, and produces three small vesicles which do not coalesce and which, if allowed to dry before the garments are replaced cannot become infected except through gross carelessness or scratching by dirty finger nails. Much greater danger of infection, in my opinion, exists where only one mark is made, as the area excoriated is usually made much larger and deeper than the total area of the three made in the manner indicated. By putting on the vaccine droplets first, only one scratching process is required, and it is much less trying to the patient on the moist surface than the dry. It is rare for a school-child to show any indication of appreciable suffering from the operation performed in this way, though unfortunately some of them present themselves in a pitiful condition of fright, expecting to see streams of blood follow the operation. As to the covering of the vaccination marks with corn plasters, wire cages, and other devices, I have acquired a great prejudice against such treatment, as I am satisfied, from results I have seen, that it is often productive of serious harm rather than of any benefit. Dressings and bandages, also, from the interference with the circulation, tending to displacement, taking with them the top of the vesicle, and leaving a raw surface, thus increasing the heat and itching of the part, are not to be recommended except when carelessness has resulted in infection and sloughing. A clean piece of linen loosely pinned or sewed into the shirt above, and falling loosely over the part, is the best treatment, if any is needed other than the wearing of clean garments, and the avoidance of scratching by the fingers.

As to the number of excoriations made, great variation is found. Most of the vaccinations effected in England before coming to Alberta show four marks, and it is remarkable how rarely one sees a bad scar in these cases with four marks. Many parents request only one mark, under the impression that the inconvenience and danger from the operation is in direct proportion to the number of vaccine vesicles produced. Where the excoriations are made as minute as possible and well separated, this impression does not appear to be well founded. As to the protection afforded, it is evident that this is the more permanent the greater the number of scars. I have rarely seen a case of small-pox in a person who has had more than one mark, and it is noticeable how frequently re-vaccination fails in those who exhibit three or more scars from a previous vaccination. Osler, in his "Medicine," notes that the English vaccination report states that out of 4,754 cases, the death-rate with one mark was 7·6 per cent., with two marks 7 per cent., with three marks 4·2 per cent., and with four marks 2·4 per cent., and that W. M. Walsh's statistics of five thousand cases give with good cicatrices 8 per cent., with fair cicatrices 14 per cent., with poor cicatrices 27 per cent., post-vaccinal cases 16 per cent., unvaccinated cases 58 per cent.

Fortunately the virulence of the great majority of the cases of small-pox treated here is, up to the present month, less serious than in the two series to which these figures refer. Let us hope that the type of the disease commonly seen here will continue to be mild, with few fatalities; but of this we have no positive assurance, as is indicated by the virulent outbreak in Montreal so recently as 1885. Some epidemics during the century previous to this date exhibited the same remarkable mildness of symptoms and low death-rate we are accustomed to. Only one of the series related showed very serious symptoms, one of the cases contracted from the unknown case at the McCauley Street school. This man had a profuse eruption on the tongue, roof of mouth, and pharynx, and threatened to die from suffocation. Both he and his companion had the disease almost confluent on the face, and the latter was badly pitted, though at no time in any special danger. It is noteworthy that the third case of this trio, a man vaccinated thirty-five years before, was the patient referred to who lost the sight of one eye from a corneal ulcer.

It is not at all creditable to Anglo-Saxon civilization to state that among this series of cases there was not a single patient who was not born in Great Britain, Canada, or the United States. And yet we commonly hear the statement made by our so-called intelligent Anglo-Saxon, who prides himself on his cleanly person and habits, that it is little wonder we have small-pox when so many unwashed foreign immigrants are coming into our community. They may need washing but they are almost invariably vaccinated and re-vaccinated.

When some four years ago the school board, acting on my advice, made a certificate of successful vaccination a condition of admittance to our schools, a strong opposition was encountered from a few anti-vaccinationists, two of whom wrote letters to the public press. To these I replied at length in two articles, which fully exposed the fallacies of the arguments and theories advanced, and as a result no more anti-vaccination protests have appeared, and the opposition to the carrying out of the law has practically died out. This is probably due, to some extent, to the fact that vaccination of the great majority of school children has been done free at the health office with uniformly good results.

There appears to be a disinclination on the part of health officers to reply to anti-vaccination articles in the public press, and I wish here to enter a plea in favour of publicity in this matter. Any health officer who chooses to take up the matter vigorously and exhaustively can quite easily convince the thinking public of the facts regarding vaccination, and it is unfortunate, in my opinion, that in some localities the laity should acquire so great a prejudice from the plausible literature published and circulated by anti-vaccination societies and individuals, while the medical profession, in the meantime, maintains a dignified silence on the subject, which is interpreted too often to mean that they cannot answer the specious arguments presented, and that in some curious way the profession of medicine is deriving a large income from the practice of vaccination. As long as we have so large a percentage of unvaccinated people in our community, so long will we have small-pox with us, with the heavy expense necessarily incurred by municipalities in keeping it under control. Continued and persistent enforcement of the present law of our province, making vaccination of school children compulsory, will have a good effect in time, in giving a large degree of immunity from attack, but compulsory vaccination and re-vaccination, as enforced in Germany, are the only measures which can effectively guard the community from frequent outbreaks of the disease. It is significant that Berlin has only twelve beds for small-pox in a pavilion of a general hospital, while London has to maintain 2,500 beds in hospitals specially constructed and maintained for small-pox alone.

THE TREATMENT OF NÆVUS WITH SOLID CARBON DIOXIDE

By E. A. Smith, F.R.C.S. (Eng.), Vancouver

THE idea of the therapeutic use of solid carbon dioxide seems to have originated with Dr. Pusey, of Chicago, in 1905. It was later used by Dr. Geyser, of New York, and communicated by him to Dr. Reginald Morton, of London, through whom I first became acquainted with it. The only literature dealing with the subject tò which I have had access consists in articles in the *Lancet* and *British Medical Journal* by Drs. Reginal Morton and McLeod.

We have in carbon dioxide snow a means of applying intense cold to the body as extensively as we wish within limits. The temperature of the snow till it all disappears as gas, under ordinary conditions of atmospheric pressure, is constant at 79° C; at 78° C. carbon dioxide is a gas. Its solid state and the firm crayon which can be made from it are strong points in its favour, as its effect can be varied, according to the length of time of the application and the pressure exerted. These are obvious advantages over liquid air, which has been used for the like purposes, in addition to which may be mentioned cheapness and easy procurability.

My own observations are based on the treatment of forty-two patients with fifty-nine nævi at Paddington Green Children's Hospital, London, England. I am going to give some general impressions gathered from this experience, and describe the methods of application.

Of the fifty-nine growths, two were pigmented moles, one also covered with hair. Of the remainder, twenty-nine were capillary nævi, sixteen cavernous nævi, seven capillary and cavernous; of five the nature is not stated. Their situations were as follows: head and neck, twenty-eight; trunk and external genitalia, twenty-five; upper limb, four; lower limb, one; not stated, one. With the exception of six, all my patients were less than one year old; and this leads me to an important point in regard to the length of time of the application.

I found that an application of more than fifteen seconds in a child under two years old produced necrosis and ulceration, while one of fifteen seconds or less caused a blister only; and further, the curative effect of the longer applications in these young subjects was not greater than that of the shorter ones, while the ulceration of course caused a cicatrix after healing, which was not the case where no ulcer was produced. On the other hand, in older children and adults longer applications must be made, from thirty to forty-five seconds, even more in some cases being necessary. As an instance of this, a big strapping girl of thirteen years had a large, scattered, pigmented mole in the left posterior triangle of the neck. Applications of thirty seconds had no effect in this case, and several of forty to forty-five seconds were required to cover the whole affected area. This case was cured, except in some scattered outlying parts, the cosmetic effect being a great improvement on the original condition, but the girl gave up treatment before the whole of the pigmented patches had been treated, because, I think, of the pain at the time of, and especially after, the application. The whole of the mole which had been treated was replaced by skin differing very little from the normal appearance, except that, up to the time she ceased to be under observation, there was a little excess of redness.

I find that my experience seems to indicate that a shorter application is required than Morton or McLeod state in their articles. This may be due to the fact that so many of my cases were in very young children.

The question of pain brings me to another point. I had a few small nævi about my own body; I suppose most of us have, somewhere or other. In order to test the treatment on myself, I got a friend to make applications, varying from thirty to forty-five seconds, to three of them. The result in all cases was satisfactory, except that in one my friend made a bad shot, and only covered half the nævus with the crayon of carbon dioxide, with the result that it is only cured as to that half. But the pain of an aching character, for some five or six hours succeeding the application, was not negligible. In my own case the nævi were situated on the abdominal wall, and in addition to pain there was a good deal of nausea—reflex, I suppose—only eventually relieved by the arrival of dinner time and and a comforting warming application of another sort inside. I rather infer, however, that the pain is greater in some cases than others. Young babies can't speak, but they can nevertheless protest. Some do and some don't, when this treatment is applied, and some that do are soon quieted, while others continue to wail for some time.

Now a word as to the course of the case and treatment. After an application of fifteen seconds in a child of, say, one year old, there is first seen a hard, white depression corresponding to the size of the crayon and the pressure exerted in the application. This soon thaws out, and the treated area gradually reddens and swells, while the nævus itself becomes harder and more purple. In two or three hours a blister forms, commensurate with the crayon of carbon dioxide used, while some œdema forms at and around the treated area, especially if near such a situation as the eyelid. I always gave instructions to carefully guard the blister from breaking, and to apply plenty of some simple, mildly antiseptic, dusting powder under a pad of cotton wool. Under this treatment the blister gradually shrivels and dries up, and in ten days to a fortnight the scab comes away, leaving the nævus in most cases cured, and very little mark at all. The cosmetic effect is really wonderful, far superior to that produced by electrolysis, while the treatment is simpler, and no anæsthetic is required. I found treatment by powder far superior to ointments, under which, in my hands, ulceration was more liable to occur, with consequent scarring.

Now I don't suggest that this treatment is the best for every case of nævus. For the flat nævi wherever situated, it is ideal. For raised cavernous nævi, if of small size, it is also extremely good, and some of my best results were among such cases; but for the large cavernous nævi, if feasible, I much prefer excision.

I would like to describe briefly two or three cases. I have already mentioned the large pigmented mole in a girl of thirteen years. The other pigmented mole was in a little girl, two years old, who was sent in to me by Mr. Burghard. The mole was situated on the left cheek, was pyriform in shape and measured one and one-half by one inches, and was covered with long fine hair. It was slightly raised and of a dark lemon colour. Three applications in all, of fifteen seconds each, were made to cover the entire area, a fortnight's interval elapsing between the treatments. The result was most satisfactory. The hair disappeared completely, also the pigmentation, the only mark left being a slight excess of redness as compared with the other cheek, such as one would have after a blister, and which would, I believe, entirely disappear in a few weeks. I did not have any opportunity of seeing whether the removal of the hair were permanent or not. If so, there may be a use for solid carbon dioxide as a depilatory.

Another case was a flat dusky nævus about the size of a 10-cent piece on the cartilaginous part of the nose. It was treated by a single application of fifteen seconds, and I had difficulty in convincing a friend who saw the child on the day of treatment, and again a fortnight later, that he was really looking at the same child. Another young child had a raised cavernous nævus, occupying the greater part of the palm of one hand. One application of solid carbon dioxide with the largest sized crayon just covered the whole growth, and the result was a perfect cure in two weeks, so that it was impossible to say, if one had not known, which hand had been affected.

Among my cases were three or four in which the cure was not all one could have desired. One had a slight recurrence at the end of three months. This was cured by two subsequent applications at intervals of one month. One case of a mulberry-coloured, cavernous nævus on the right temple was very troublesome. It had been treated by electrolysis, and by the galvano-cautery, with but little improvement, and was subsequently treated six times with solid carbon dioxide. One application was of thirty seconds, and produced ulceration, and still the nævus was not cured, though the overlying skin was white. This child was under six months old.

I have noticed ulceration as a result of treatment in three cases. Two where applications of twenty seconds and one of thirty seconds were used, in children of fifteen, two, and four months respectively. These were among my earlier cases, and it never happened with applications of fifteen seconds or less.

My experience leads me to the conclusion that, at least in nævi and moles, the length of time of the application should be governed more by the consideration of the age of the patient than the kind or extent of the lesion. Adult tissues will stand with inpunity an application which would inevitably produce necrosis and scarring in an infant. In the girl of thirteen years with the large pigmented mole, the first two or three applications of twenty to thirty seconds had no curative effect, while applications of forty-five seconds succeeded well. That the longer time required was not due to the nature of the growth is shown by the successful result of the treatment of a hairy pigmented mole on the cheek of a little girl of two years old previously mentioned.

One more point I ought to mention. A second application over the same area at the same sitting produces a far more violent reaction than a single one; so, in treating an extensive nævus, if two applications are made at the same sitting to different parts, care should be taken that they do not overlap.

My own experience has so far been confined to the treatment of nævi and moles. The treatment has, however, been used with success for warts, for which a long application is required; also for superficial rodent ulcers, for which it appears to be equally as good as radium, and much cheaper; and for lupus erythematosus and lupus vulgaris, where the lesions are superficial. I believe it has been used for hæmorrhoids, but have been unable to find the reference to the cases. I have not had the opportunity to treat a large port wine stain yet. Morton reports good results and McLeod a want of success, in such cases.

Conclusions. The use of solid carbon dioxide is a valuable addition to our armamentarium for the treatment of nævus, moles, and some other superficial conditions.

The application should be made, several at intervals in extensive cases, for not more than fifteen seconds in children up to two years old, and for as long as forty-five seconds, or even more, in an adult.

No anæsthetic is necessary for the application, which is comparatively painless, but pain during the thawing out and for possibly some hours afterwards, is sometimes considerable.

In the after-treatment a drying, mildly antiseptic powder with a pad of aseptic wool, is preferable to ointments, under which there is more tendency to ulceration and greater difficulty in maintaining asepsis.

Larger does of anti-toxin are now administered to patients in the Toronto Isolation Hospital. The doses given range from ten thousand to twenty thousand units and the results have been most satisfactory. Although the usual number of cases of diphtheria and scarlet fever were treated in the hospital, not a single death occurred as a result of either of these diseases during the month of September.

TICK BITE IN BRITISH COLUMBIA

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A VERY fatal disease, with symptoms closely resembling those of typhus fever, occurs in some parts of Montana. The disease is known locally as spotted fever, or tick fever. It is called tick fever because it is transmitted by the bites of a tick. When it became known that this tick, *Dermacentor venustus,* exists in Southern British Columbia, inquiries were instituted with the object of learning whether the disease which it transmits in Montana also exists in Canada. With this object, letters were sent out in the middle of April of this year to a number of doctors practising in Southern British Columbia. The replies received from them were so interesting that more letters were sent out to medical men in British Columbia and in the neighbouring states and provinces. Altogether two hundred and ten letters were sent out to ask physicians if instances of ill effects following tick bites, or of a disease resembling spotted fever, had occured in their practices. In all, forty replies were received. Many of those who replied had seen cases in which infection of the wound caused by a tick bite had been followed by local inflammation that was sometimes very severe. Six letters mentioned instances in which the bites of ticks had been followed by paresis, or paralysis, and, sometimes, by death. The symptoms reported in these cases are quite unlike those which occur in the tick fever of Montana.

Dr. S. B., Fernie, B.C. About 1898, at Rossland, two infants died in convulsions; wood ticks were found on the necks of both.

Dr. G. C. E., Rosedale, B.C. In June, 1910, a child four years old, had almost complete paralysis of the legs. A large wood tick had been taken from the nape of the neck a few hours before the doctor's visit. After a purge and a few hours' rest the child completely recovered.

Dr. G. B. H., Creston, B.C. A girl of four years gradually lost the use of her legs, during two or three days, until she was unable to stand. A tick was removed from the nape of the neck and within three days the child was well again.

Dr. G. B. H., Victoria, B.C. About 1900, at Nelson, B.C., a child of five years of age was bitten on the back of the head by a tick. The patient died in convulsions. Dr. H. is very certain that the wood tick causes symptoms and that there is no possibility of confusing these symptoms with those caused by infantile paralysis.

Dr. C. M. K., Grand Forks, B.C. About 1904 a child of four years had complete paralysis of the legs and a lesser degree of paralysis of the arms. A wood tick was removed from the nape of the neck and rapid recovery resulted. Dr. K. knows of two or three such cases.

Dr. O. M., Vernon, B.C. January, 1912. A healthy child, three and a half years old, had been perfectly well until two hours before examination; when the patient was seen there was no temperature and the pulse was normal, but the legs were almost completely paralyzed. The child could not stand and the reflexes were gone. A tick was found, firmly attached to the base of the neck; it was removed. The paralysis continued during the day; next morning there was a slight improvement and by the evening the child had recovered the use of her legs. Dr. N. also knows of an instance in which an adult complained of weakness of the legs after a tick bite on the back.

Dr. W. O. R., Nelson, B.C. About 1900 a child died suddenly with symptoms of acute ascending paralysis. After death a large tick was found at the nape of the neck. In 1901 a second child with the same symptoms died, after an illness of two days. A tick was found attached to the right temple. The knowledge of these two cases suggested the presence of a tick when a third child, previously very healthy, was seen, whose legs had been becoming weaker for two days. One was found at the nape of the neck; it was removed and in two days the child was quite well again. On April 10th, 1912, a little girl of three had become paralyzed. The legs were completely paralyzed and the reflexes were gone; paresis of the arms was marked. Three ticks were removed from the nape of the neck and the child recovered completely.

Dr. D. R. S., Vancouver, B.C. At Rossland a child of three or four had paralysis of the legs with absence of reflexes. A tick was removed from the neck and the symptoms disappeared.

Dr. Seymour Hadwen, of Agassiz, B.C., has heard of two cases in which the symptoms of paralyzed children disappeared after the removal of ticks. One was in Ashcroft, and the other in Bella Coola.

Judging from some of the letters received, a belief that the bites of ticks may cause paralysis is quite common in some parts of British Columbia.

A consideration of these reports makes it seem very probable that severe symptoms may follow the bites of ticks in British Columbia. Children seem to be most affected. In them, paresis and paralysis of the extremities, especially of the legs, are the most constant symptoms; and when such symptoms are seen ticks are usually found about the patient's head. It was not known that the bites of ticks could produce such symptoms.

These notes are made public in the hope that they may induce physicians who have seen or who may see similar cases to publish their experiences; for it seems possible that an undescribed disease, caused by ticks, may occur in British Columbia. The subject demands investigation; the writer would welcome information and material concerning it. Living ticks, removed from children in whom their bites had caused paralysis, would be especially valuable.

Case Reports

HEMIPLEGIA IN TYPHOID FEVER

HEMIPLEGIA occurring during typhoid fever is a sufficiently rare event to warrant the publication of additional cases when possible. The most exhaustive article on the subject is that by Smithies, published in 1907 (*Jour. Am. Med. Assoc.*, Vol. 49, p. 389). He there reports and tabulates forty-three cases reported in the literature to that date. More recently Williams (*Am. Jour. Med. Sciences*, Vol. 143, p. 677, May, 1912) reports four cases in addition.

The main features of my case are as follows: W. P., a Scandinavian, aged thirty, was admitted to the medical service at the Vancouver General Hospital on September 16th, 1911, having been ill for a week. The diagnosis of typhoid fever was confirmed by a Widal reaction. For six days the disease ran a mild course, the temperature gradually declining. On the evening of the twenty-second, he was slightly delirious and had an involuntary action of the bowels. He slept well that night. When roused at six o'clock next morning (fourteenth day of illness) for nourishment, he had difficulty in swallowing, and two hours later the left arm and leg were found to be paralyzed. The patient was conscious, rational, and able to speak. On the twenty-fifth he swallowed his food more easily and there was some evidence of returning function in the leg. During this time the temperature had been rising to a maximum of 104°, pulse 108. On the twenty-eighth, he had a large hæmorrhage from the bowel, followed during the next two days by six others. He died on October 3rd, on the twenty-fourth day of illness and the tenth after the onset of paralysis, having been unconscious for some hours.

A complete autopsy was made by Dr. Cumming, assistant pathologist to the hospital. The usual signs of typhoid fever were present in the abdomen, the heart was normal. The brain, after removal, was found somewhat flattened over the right parietal region, in which area there was also slight thickening of the meninges. On section, a softened place was found on the right side involving the greater part of the second and third frontal and the ascending parietal convolutions, part of the supra-marginal and angular gyri and the upper part of the tempero-sphenoidal lobe. In size about that of a small orange, this area was of a dirty yellowish-grey colour and very soft. There were no cavities. The left side of the brain was normal, as were also the basal ganglia and internal capsule on both sides, the cerebellum, pons, and medulla.

The right middle cerebral artery was found to be completely blocked for about one inch after entering the sylvian fissure. The artery was thickened and its lumen filled with a firm semi-fibrosed substance adherent to the walls. The thrombus began at a point beyond the arterial radicals, going to the anterior perforated spot, and extended a short distance into each of the terminal branches of the artery.

J. M. PEARSON.

Vancouver.

AT the Cleveland Convention of the Great Lakes International Pure Water Association, which took place October 24th, Dr. Charles J. Hastings, of Toronto, was chosen president of the association. The vice-president is Dr. Guy Kiefer, Detroit, and the secretary-treasurer is Dr. Paul Hanson, Chicago. Dr. C. E. Ford, Cleveland, is chairman of the executive committee, and Dr. H. A. Whittaker, Minneapolis, is the editor for the association. The next meeting will be held at Toronto. The pollution of the Great Lakes was discussed at the Cleveland meeting. The Canadian members who were present were in favour of a general law, both in Canada and the United States, which would forbid the discharge of sewage into the lakes. On the other hand, Dr. A. J. McLaughlin, of the United States Government Health Service, considered that the purification of the water of the lakes would be a cheaper and also more efficient method of dealing with the question.

Editorial

SANITATION IN QUEBEC

SOMETHING less than justice was done to Quebec in the October issue of the JOURNAL. In an editorial dealing with the public health of Ontario it was stated that Ontario, having divided its territory into sanitary districts, Quebec followed the example; but while the nominations were made in Ontario in the province of Quebec no inspectors were yet in the field. In reality the province of Quebec was the first of the provinces of Canada to propose the division of its territory into sanitary districts each in charge of an inspector, a report upon the scheme having met the approval of the Provincial Board of Health, December 9th, 1910. During the month of January, 1911, the Provincial Board of Health interviewed the government on the matter but asked the government not to make the nominations until the universities should have time to qualify physicians for the positions, the board desiring to employ only men who had secured a diploma in public health. On April 3rd, 1911, Sir Lomer Gouin, the premier, notified the board that the proposal had received approval and a subsidy would be available from July 1st, 1912, the date the board had stated as giving sufficient time for special courses at universities. From October, 1911, to June, 1912, the desired special courses were given in the three universities of the province, and in July last the board was enabled to notify the government that seven candidates had secured the diploma in public health and, in addition, had subsequently passed a provincial supplementary examination to test their administrative fitness for the duties of a district inspector. The appointments are promised in the immediate future. From the above facts, we feel sure that all will admit that the delay in carrying out the arrangement was due to prudence, and is calculated to secure a better service, and that the idea of giving the positions to professional sanitarians only will be fully appreciated by the profession.

HOSPITALISM

PROBABLY few students, or physicians of the younger generation, know the meaning of the term "hospitalism." Happily, the condition it signified is a thing of the past. The wonderful progress of modern surgery is intimately associated with the improvement and multiplication of hospitals in recent times, and it is difficult to realize that less than fifty years ago the horrors of the surgical wards, their appalling death rate, the inevitable suppuration and its stench, pyæmia, "hospital fever," in a word, *hospitalism*, threatened to banish the practice of surgery from hospitals altogether.

An impressive account of those days of discouragement in the decade before the coming of Lister, is given by Sir Hector Cameron, the distinguished emeritus professor of surgery in the University of Glasgow, in his recent address at the opening of the session of the Toronto medical faculty. Lister was of our own times, his beneficient life lasting into the present year; and the history of the fundamental revolution which he wrought in surgical treatment is familiar to all. But not so well known is the earnest work in this connexion of another great benefactor, Sir James Simpson, to whom we owe chloroform anæsthesia, and who conducted, during the sixties, an untiring crusade against the evils of hospital segregation.

His remedy was to change the hospitals "from being crowded palaces—with a layer of sick in each flat—into villages of cottages with one or, at most, two patients in each room. . . ." And, indeed, when he could collect reliable statistics, showing that in two thousand amputations in the large hospitals of London, Edinburgh, and Glasgow, no less than forty per cent. of the patients died, while in the same number of amputations performed in rural districts or private houses all but ten per cent. recovered, one must admit that he had reason on his side. Fortunately, when the truth was made known, the remedy proved infinitely more simple and efficient.

Lister would often refer with satisfaction to the excellent training he had received in the preliminary scientific subjects, chemistry, physics, and biology; and this led Sir Hector to discuss the question of the congestion of the medical curriculum. He deprecated the proposal of certain reformers that the teaching of these subjects should be relegated to the school years, and suggested that relief should be sought for the overworked student in lessening the number of examinations rather than that of the subjects of study, which now find a place in the curriculum. We can sympathize with the applause which must have greeted this suggestion.

MEDICAL COUNCIL OF CANADA

THE first meeting of the Dominion Medical Council was held in Ottawa, November 7th. The Hon. Dr. Roche attended on behalf of the government, and the following representatives of the profession in Canada were present: From the various provincial councils: Ontario, Drs. W. Spankie and R. J. Gibson; Quebec, Drs. L. P. Normand and Arthur Simard; New Brunswick, Drs. W. W. White and A. R. Atherton; Nova Scotia, Drs. John Stewart and A. W. H. Lindsay; Prince Edward Island, Drs. S. R. Jenkins and Alexander MacNeill; Manitoba, Drs. R. S. Thornton and J. S. Gray; Saskatchewan, Drs. W. A. Thompson and A. MacG. Young; Alberta, Drs. R. G. Brett and John Park; British Columbia, Drs. R. E. McKecknie and R. E. Walker. From the universities:

Dalhousie, Dr. D. Fraser Harris; Manitoba, Dr. J. R. Jones; Queen's, Dr. J. C. Connell; Western, Dr. H. A. McCallum; Laval, Montreal, Dr. E. P. Lachapelle; Laval, Quebec, Dr. J. Dagneau; McGill, Dr. F. J. Shepherd; Toronto, Dr. J. M. McCallum. Representatives of Governor-in-Council: Dr. T. G. Roddick, Montreal; Dr. Walter Bapty, Victoria; Dr. G. A. Kennedy, Macleod, Alberta. Homœopathic practitioners, Dr. E. A. P. Hardy, Ontario; Dr. C. E. Sugden, Manitoba; Dr. Morgan, Quebec.

After an eloquent reference to the history of the Canada Medical Act the minister called upon the meeting to appoint its officers. Dr. T. G. Roddick was unanimously elected president; Dr. R. S. Thornton, of Deloraine, Manitoba, vice-president; and Dr. R. W. Powell, of Ottawa, registrar. It was understood subsequently, however, that Dr. Powell would not take official control until the next meeting.

An executive committee was formed consisting of the president; vice-president; Drs. Normand, Spankie, McKecknie, Hardy, and Stewart. This committee subsequently met and nominated standing committees to be appointed annually.

It was thought well to make the education committee a large and representative one, namely, all the university members and the following: Drs. Walker, Brett, Thompson, Thornton, Gibson, Normand, White, Lindsay, Jenkins, and Morgan, with J. C. Jones, convener Much work was done by this committee with reference to examinations especially, but no definite conclusions were reached. A majority, however, favoured the holding of examinations in two or more of the university centres; and with reference to the subjects of examination these in all probability will be anatomy and physiology only of the primaries, and all the final branches.

After a sitting of two days and a half much work of organization was accomplished, the rules and regulations committee, under Dr. Bapty, being especially active; but as all rules and regulations have to be submitted to the Governor-in-Council before they can be acted upon, and as many matters of importance still remained to be done, it was decided to adjourn until June next. In the meantime, a committee composed of the president, Drs. Gray and Lindsay, kindly consented to put into proper form the work already done by the various committees, and to prepare a complete set of regulations which, being first approved by the council at its next meeting, will be submitted at once to the Governor-in-Council.

DEPARTMENT OF PUBLIC HEALTH

THE following resolution was passed at the annual meeting of the Canadian Medical Association at Edmonton in August last: "That the Canadian Medical Association at this its forty-fifth session desires again to call the attention of the Dominion government to the urgent necessity of creating a department of public health for the Dominion, to be administered by one of the existing ministers of the crown; such department to take cognizance of all matters of sanitary science and public health now administered through several separate departments at Ottawa and coming within the powers allotted to the Federal authorities by the British North America Act. The Canadian Medical Association for many years past has brought this subject to the attention of the Federal authorities by formal resolution, and now wishes to reiterate its opinion that Canada as a nation, or self-governing Dominion, is not abreast of the times, and is not acting in consonance with progressive civilized countries. That sanitary science and public health with all that appertains thereto is of the utmost importance to the well-being of the nation, and it is of far greater importance to guard the health and best interests of the inhabitants of any country than to make laws simply to prevent the entrance of disease through immigration. That this association is only actuated in this matter in what it conceives to be the best interests of Canada as a whole. That a copy of this resolution be submitted to the Hon. the Secretary of State for submission to the

Hon. the Privy Council for Canada; to the Right Hon. the Prime Minister, and to the Hon. the Minister of Agriculture, accompanied by a request that the whole question be taken at an early date into the earnest consideration of the government of Canada."

In consequence of this resolution, a deputation consisting of Dr. McCallum, the president of the association; Dr. R. W. Powell, Dr. Lachapelle and Dr. J. Stewart, waited on the Premier on Friday, November 8th. The deputation was well received and was assured that the matter would have careful consideration, that the government realized the importance of the scheme as outlined, and would do all that was possible to ensure for Canada its rightful place in this respect among the leading nations of the civilized world. The association might rest assured, the Premier added, that when the government felt that the time was ripe for the creation of a public health department, nothing would be left undone to secure its successful working in the best interests of the Dominion.

HOSPITALS IN SOUTH AFRICA

AN ordinance bearing on the subject of state-aided hospitals passed through the provincial council of the Cape, July 15th, 1912, and will come into effect March 1st, 1913. The measure is highly commended in the *South African Medical Record*, of July 27th, and is a matter of great satisfaction to confrères in South Africa. The principles embodied in the ordinance, so far as the purely medical aspects are concerned, are those laid down by the South African Congress in 1910. Hospital districts are to be constituted in which there will be at least one state-aided hospital or dispensary. A hospital board will be established for each district, which will have the control of all hospitals within the particular area—the board to consist of from six to thirty-six members, according to the size of the district, whereof one-third will be elected by the contributors at the annual general meeting and one-sixth by the honorary visiting medical officers, or by the administrator. The term, "honorary visiting medical officers" is defined as "registered medical practitioners who hold medical appointments at institutions under the control of a board and who are not in receipt of any salary, fees, or emoluments from such board." Monthly meetings of the board will be held, which will be open to the public. The patients are to be divided into two classes—"paying" and "non-paying," the former to have the privilege of calling in their own medical attendant. As the payment of fees involves the opening of the hospital to all medical men, it is probable that, wherever practicable, certain hospitals will admit paying patients only, while others will restrict themselves to free patients. The hospital board possesses authority to establish new institutions or close those already established in a district, provided the consent of the administrator has been given. A medical inspector of hospitals and charitable institutions, who will assist in the administration of the ordinance, will be appointed and committees of management established. A government subsidy will be paid to each board; namely, thirty shillings for every pound contributed, other than by bequest; one pound for every pound received in fees from patients; and one pound for every pound bequeathed. In the case of bequests, however, the grant may not exceed £500. Should there be a deficit and the administrator is satisfied that the board has made reasonable efforts to collect the money by voluntary contributions, he shall authorize the payment of such deficit out of moneys appropriated for this purpose.

A SOMEWHAT interesting point has arisen at Vancouver in connexion with the medical inspection of school children. The question at issue is whether the school authorities have the power to permit a medical inspector to perform minor operations on the children examined by him, should he consider such to be advisable. It is contended that the practice, if adopted, would interfere with the work of the private practitioner.

On Monday, October 14th, an outbuilding situated in the rear of the Ottawa General Hospital took fire. The fire was not extensive and was quickly extinguished. This incident is a forcible reminder that all hospital buildings should be fireproof. It is easy to imagine the harmful effect on patients of such an occurrence, and the knowledge that the building was in no way fireproof largely increased their fears. In such a case, the mere fact that the building was known to be fireproof would afford much consolation to those unable to save themselves in case of fire.

At the meeting of the Federal Committee of the British Medical Association in Australasia, held in Melbourne in May last, it was proposed that the branches of the British Medical Association in the several states of Australasia should jointly own and conduct a weekly paper and combine to acquire the interests of the New South Wales and Victorian branches in the *Australasian Medical Gazette* and the *Australian Medical Journal*, their respective official organs. The proposal is now under consideration by the several branches.

The American Surgical Association has appointed a committee consisting of Drs. William L. Estes, South Bethlehem, Pa.; Thomas W. Huntingdon, San Francisco; John B. Walker, New York; Edward Martin, Philadelphia; and John B. Roberts, chairman, 313 S. 17th Street, Philadelphia, to report on the operative and non-operative procedure of closed and open fractures of the long bones, and the value of radiography in the study of these injuries. Surgeons, who have published papers relating to this subject within the last ten years, will confer a favour by sending two reprints to the chairman of the committee. If no reprints are available, the titles and places of their publication are desired.

COMPULSORY notification of cases of pulmonary tuberculosis has been in force in certain districts of Scotland since 1906. Experience gained in this way has proved that the difficulties anticipated in connexion with such notification do not occur in actual practice. Consequently it has now been made compulsory throughout the whole country. Notification forms are supplied, and the local authority is required to pay the physician the sum of two shillings and sixpence in respect of each notification sent in by him. It is now almost universally recognized that the accurate information furnished to public health authorities by compulsory notification, is an indispensable preliminary to effective and complete preventive measures against the disease.

THE first general meeting of the State Medical Service Association, which was inaugurated at Liverpool in July last, was held in London, October 25th. One hundred and thirty-five medical men have become members of the association. An address was given by Professor Benjamin Moore, Liverpool, who was in the chair. The aim of the association, as outlined by Professor Moore, is to educate the medical profession and the public to the need for a State Medical Service, which will give advice when needed to any member of the community with the purpose of preventing disease. Arrangements were made for the formation of district branches of the association, and an executive committee appointed, of which Dr. G. A. Heron is the chairman. It was also decided that a weekly journal, to be entitled *The Medical World*, should be issued, which would be the official organ of the association.

Book Reviews

COLLECTED PAPERS BY THE STAFF OF ST. MARY'S HOSPITAL (MAYO CLINIC) 1911. Octavo of 603 pages, illustrated; price, cloth, $5.50 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian agents: The J. F. Hartz Company, Limited, Toronto.

The first of these volumes appeared in 1909, and the present volume contains all the papers read and published by the members of the staff of St. Mary's Hospital during the year 1911. The phenomenal growth of the Mayo clinic at Rochester, Minnesota, both as regards the amount of work done there and also as regards the world-wide interest evoked by the character of that work, renders the issue of each succeeding volume of this series a sort of surgical milestone. The contents of the volume are as varied as the nature of the work done at the clinic, and yet the arrangement of the papers is such as will enable the reader, at a glance, to pick out whatever may be of interest to him. The list of contributors shows that most of the staff have written something worthy of publication during the year, and Mrs. Mellish has, as usual, fulfilled the task of editing and arranging these papers with her usual skill, the careful indexing being especially praiseworthy. The illustrations are particularly good, especially the numerous reproductions of skiagrams. The good paper upon which the work is printed and the excellent wood-cuts have here done wonders.

Charles H. Mayo's articles upon the open treatment of fractures are sound and sane. He does not advocate using Lane's plates upon every case of fracture, but he is not afraid to use these buried splints, or other methods of fixation, in those cases in which they are called for to secure a good functional result. Particularly interesting are the few papers devoted to surgical technique, and one wishes there had been more of them. Among the general papers is a thoughtful essay on the "Causation of Cancer," by Wilson, and W. J. Mayo details, in his usual bright and sympathetic manner, his impressions of a visit to some of the more noted clinics. The last article in the volume is entitled, "In Memoriam." It is a simply written account of the life and labours of William Worrall Mayo, father of W. J. and C. H. Mayo, who died at Rochester, in

March, 1911. He thus lived to see the modest clinic, which he founded in connexion with St. Mary's Hospital in 1863, become the surgical centre which it is to-day, and to know that this success was due to the honest work and scientific vision of himself and his two sons. An Englishman by birth, his life, in his early professional years, had been a strenuous one; and what with Indian warfare and the bitter fratricidal strife between the North and the South, one wonders how he accomplished so much scientific work. Yet we know from this article that, though he was freed from professional worries during the last fifteen years of his life, he never lost interest in the work of the hospital, and his physical and mental vigour are shown by the fact that at the age of eighty-five he made a trip around the world alone, and his regretted demise at the age of ninety was due to an accident. Is it any wonder that the sons of such a father should astonish visitors by the amount of work they accomplish every day?

The binding, general appearance, and especially the printing of this volume are, from the reader's point of view, all that could be desired, and reflect great credit upon the well-known publishing house which has issued it.

MIND AND ITS DISORDERS. A TEXT-BOOK FOR STUDENTS AND PRACTITIONERS. By W. H. B. STODDART, M.D., F.R.C.P. Second edition; illustrated; price 12s. 6d. net. London: H. K. Lewis, 1912.

Dr. Stoddart's book has been familiar to most students of mental disease since the publication of the first edition about four years ago, but the progress since that time has been so marked that what amounts to practically a rewriting of the subject has been found necessary. Indeed, two chapters have been added upon the subject which the author describes as the study of the "subconscious by psycho-analytic methods." The book is especially rich in its consideration of the legal aspects of insanity in England at least. It has arisen out of an extraordinarily wide experience, and every page is enriched by references to incidents which must have happened in the daily life of the writer. It is not a bald narrative and can be read with interest even by a person who is not especially concerned in the subject which it treats. This is quite different from saying that the book is not entirely scientific. The illustrations are numerous and useful, and the printing is in the best style of Mr. Lewis.

THE THERAPY OF SYPHILIS. ITS DEVELOPMENT AND PRESENT POSITION. By Dr. PAUL MULZER, of Berlin. With a preface by PROFESSOR P. UHLENHUTH, M.D.; translated by A. NEWBOLD. Price, cloth, $1.50 net. New York: Rebman Company, 1912.

Messrs. Rebman make a specialty of presenting to the profession translations of the best books which proceed from the German clinics and laboratories. This is a service of great value and it is increased by the wise selection which they make from the great output of German literature. The subjects are usually limited in scope, and the treatment is always by a master. In view of recent discoveries, it is proper that a summary should be given of the present position of the therapy of syphilis. The treatment of this disease has been entirely transformed since the discovery of salvarsan; and it is an interesting fact that Dr. Mulzer by no means underestimates the value of mercury. The historical summary is comprehensive and sound, and the bibliography is extensive, although it is not to be wondered at that less than justice has been done to the observation of English-speaking physicians.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. WITH ESPECIAL REFERENCE TO THE APPLICATION OF REMEDIAL MEASURES TO DISEASE AND THEIR EMPLOYMENT UPON A RATIONAL BASIS. By HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Fourteenth edition, thoroughly revised. Octavo, 984 pages, with 131 engravings, and 8 full-page coloured plates. Cloth, $4.00 net. Philadelphia and New York: Lea & Febiger, 1912.

Fourteen editions in twenty-two years—that is really the only comment which it is necesary to make upon this book. There are few physicians who have not one or other of those editions in their libraries, and we may well believe that Dr. Hare has again succeeded in his "endeavour to include all that is valuable in the method of employing both old and new remedies." The especially new matter which we note is chapters dealing with the use of salvarsan, tuberculin, vaccine, therapy, Bier's method of treatment by artificial hyperæmia, and the employment of cardiac stimulants in cases of lesions of the bundle of His. The book is the product of thirty years' experience and is likely to remain a standard for many years to come.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

A MANUAL OF PERSONAL HYGIENE: PROPER LIVING UPON A PHYSIOLOGIC BASIS. By EMINENT SPECIALISTS. Edited by WALTER L. PYLE, M.D. Fifth edition, revised and enlarged; illustrated; price, cloth, $1.50 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents: The J. F. Hartz Company, Limited, Toronto.

LIFE AND LETTERS OF DR. WILLIAM BEAUMONT, INCLUDING UNPUBLISHED DATA CONCERNING THE CASE OF ALEXIS ST. MARTIN. By JESSE S. MYER, A.B., M.D. With an introduction by SIR WILLIAM OSLER, M.D., F.R.S., and fifty-eight illustrations. St. Louis: C. V. Mosby Company, 1912.

AN INTRODUCTION TO THE STUDY OF INFECTION AND IMMUNITY, INCLUDING SERUM THERAPHY, VACCINE THERAPHY, CHEMOTHERAPHY, AND SERUM DIAGNOSIS. By CHARLES E. SIMON, M.D. Octavo, 301 pages; illustrated. Price, cloth, $3.25, net. Philadelphia and New York: Lea & Febiger, 1912.

HOUSE FLIES AND HOW THEY SPREAD DISEASE. By C. G. HEWITT, D.Sc. Cambridge: University Press, 1912.

MOTHER AND BABY. OUTLINES FOR A YOUNG MOTHER ON THE CARE OF HERSELF AND BABY. By SELINA F. FOX, M.D., B.S. Illustrated. Price, 1s. 6d., net. London: J. & A. Churchill, 1912.

AIDS TO THE DIAGNOSIS AND TREATMENT OF DISEASES OF CHILDREN. By JOHN MCCAW, M.D., R.U.I., L.R.C.P., Edin. Fourth edition. Price, cloth, 4s., net.; paper, 3s. 6d., net. London: Baillière, Tindall & Cox, 1912.

A MANUAL OF AUSCULTATION AND PERCUSSION EMBRACING THE PHYSICAL DIAGNOSIS OF DISEASES OF THE LUNGS AND OF THE THORACIC ANEURYSM AND OF OTHER PARTS. By AUSTIN FLINT, M.D., LL.D. Sixth edition, revised and enlarged by HAVEN EMERSON, A.M., M.D. Philadelphia and New York: Lea & Febiger, 1912.

MATERIA MEDICA AND PHARMACY. By R. R. BENNETT, B.Sc. (Lond.), F.I.C. Second edition. Price 4s. 6d., net. London: H. K. Lewis, 1912.

MIND AND ITS DISORDERS. A TEXT-BOOK FOR STUDENTS AND PRACTITIONERS. By W. H. B. STODDART, M.D., F.R.C.P. Second edition. Price, 12s. 6d., net. London: H. K. Lewis, 1912.

MUSCLE SPASM AND DEGENERATION IN INTRATHORACIC INFLAMMATIONS AND LIGHT TOUCH PALPATION. By F. M. POTTENGER, A.M., M.D., LL.D. Illustrated. Price, $2.00. St. Louis: C. V. Mosby Company, 1912.

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Men and Books

By Sir William Osler, M.D., F.R.S.

XVI. William Beaumont. Generations of medical students have listened with keen interest to the tale of William Beaumont and his Canadian *voyageur*, Alexis St. Martin, one of the most instructive chapters in the history of physiology; but the story in full has lain buried in two old chests, the possession of Mrs. Keim, Dr. Beaumont's daughter. Some ten years ago she very kindly gave me access to some of these documents, which I used for an address on "A Pioneer American Physiologist," and now Dr. Jesse Myer, of St. Louis, has utilized them freely in the "Life and Letters of William Beaumont" (St. Louis, C. V. Mosby Co., 1912). The work is a model biography, in the preparation of which the author has gone to the original sources; and we have a picture drawn by a strong hand, with admirable taste and judgement. It is a tribute to the care with which the old New England registers have been kept that the author has been able to trace the genealogy of William Beaumont to an ancestor of the same name who settled in Saybrook, Conn., about 1640. Born of a fine sturdy stock, with the "Wanderlust" still active, in 1806 the future physiologist, then just of age, refused the offer of a farm from his father and started north "with a horse and cutter, a barrel of cider and $100," seeking his fortune. At Champlain, in New York State, close to the Canadian border, he taught school for three years; at the end of which time he began the study of medicine under Dr. Chandler, of St. Albans, Vermont, with whom he served an apprenticeship for two years. From the note-books of this period Dr. Myer quotes a number of cases which show that the young student was already a keen observer. In June, 1812, he presented himself for examination before the Medical Society of the State of Vermont, and received a license "as a judicious and safe practitioner in the different avocations of the medical profession." War with Great Britain had just been declared, and Beaumont was gladly received into the army at Plattsburg, on December 22nd, as Surgeon's Mate. His diary of the expedition against Toronto—then Little York—and the capture of the fort, is full of interest, and here he had his first and very active experience in military surgery. He was on duty for nearly two years, and took part in the battle of Plattsburg in August, 1814. Though still retaining his rank, he began practice with another army surgeon in Plattsburg, announcing that they had "commenced business in the line of their profession," in connexion with which they had also opened a general store. His note-books of this period show how carefully he kept the records of important cases.

Though very successful in practice, the longing for the old military life induced him, in 1830, to accept a commission as Post Surgeon, and he was detailed for service at Fort Mackinac (then on the far away north-west frontier), which he reached by way of the Great Lakes, taking a passage at Black Rock by the *Walk on the Water*, the first steamer on the upper lakes. His journals at this time are very full and valuable, giving an excellent description of the country.

At Mackinac, the centre of the trading posts in the North-West, in June, 1822, occurred the accident to the young French-Canadian, Alexis St. Martin, which gave Beaumont the opportunity of his life. The circumstances of the case are very fully given by Myer, and there is reproduced a most interesting facsimile of the first page of Beaumont's hospital record. It was not until 1825 that Beaumont realized the great importance of St. Martin for experimental purposes. Through the wound, by this time completely healed, he could look directly into the cavity of the stomach, and St. Martin had been taught to submit passively to almost any procedure.

The story of the famous experiments is in every work on physiology, but the details given by Dr. Myer enable us better to appreciate the troubles, worries, and difficulties with which Beaumont had to contend. The famous book on "Experiments and Observations on the Gastric Juice" appeared at Plattsburg in 1833. Badly printed, on poor paper, it is one of the most treasured of American medical monographs, copies of which are becoming increasingly scarce.

In 1834 Beaumont was transferred to Jefferson Barracks, St. Louis, which was to be his residence for the remainder of his life. The following year he took part in the establishment of a School of Medicine in St. Louis, and was offered the Chair of Surgery. In 1840 he resigned his commission and began private practice. After a busy and prosperous life, Beaumont died in March, 1853, universally beloved in the community.

Alexis St. Martin returned to Canada, and spent the latter part of his life at St. Thomas de Joliette. In 1880 I saw a newspaper announcement of his death, and through Judge Baby and Dr. Duncan McCallum I tried hard to be allowed to secure the stomach for the Surgeon General's Museum at Washington, but the family resisted all requests. Judge Baby got for me the interesting photograph of St. Martin, in his eighty-first year, reproduced at page 299, showing the fistulous orifice.

Beaumont's observations settled many obscure points in the physiology of digestion, and one misses in Dr. Myer's book a critical discussion of the significance of his work, and its relation to more recent views. His experiments may be said to have settled finally the chemical nature of the digestive process, and among other important observations may be mentioned the confirmation of the discovery by Prout of the presence of hydrochloric acid in the gastric juice; the recognition that the essential elements of the gastric juice and the mucus secretion were separate; the establishment by direct observation of the profound influence of mental disturbances on the secretion of the gastric juice and on digestion; the fuller and more accurate comparative study of digestion in the stomach with digestion outside the body; the rapid disappearance of water from the stomach through the pylorus; the first comprehensive and full study of the motions of the stomach; the study of the digestibility of different articles of diet, which remains to-day one of the most important contributions ever made to practical dietetics; and the relation between the amount of food taken and the quantity of gastric juice secreted.

A NEW wing is to be added to St. Joseph's Hospital at London. Patients are continually being refused, as there is no room for them in the hospital. This applies not only to St. Joseph's but also to the Victoria Hospital. However, the two wings which are being added to the latter institution are almost completed now, and St. Joseph's Hospital will be enlarged next spring as soon as it is possible to begin to build.

Res Judicatæ

THE OTTAWA EPIDEMIC

INCREASED knowledge brings increased responsibility, and the progress of sanitary science has entirely altered the position of a medical officer of public health. He can no longer plead that he merely shares a common ignorance of the causes of epidemics. He knows the causes. He knows how they should be prevented or removed. His whole duty is not performed when he has offered advice. If that advice is not followed his duty is to resign, as a physician would withdraw attendance upon a patient who deliberately neglected his instructions. The fate of the medical health officer of Ottawa—no matter how it may be deplored by the profession—is likely to arouse all health officers to a fresh apprehension of their duties and of their dangers. At the moment small-pox is prevalent in Montreal and its vicinity. For two years there has been a remarkable recrudescence of the disease in the province at large. An unvaccinated population is growing up and it is as sure as truth that the present outbreak, if unchecked, will blaze up into such an epidemic as fell upon the people in 1885, when four thousand persons lost their lives. In that hour the health authorities will not be held to be justified by the plea that they gave advice which was not heeded, and instructions which were not carried out. Their only safety lies in a timely resignation, if their advice is not followed, and a transference of the responsibility to the people as a whole.

During the summer an epidemic of typhoid broke out in Ottawa. It could not help breaking out, as the people were drinking water from a broken pipe which was laid in a sewer. More than fifteen hundred persons were affected and seventy lost their lives. This is really a case of homicide on a large scale, and the medical health officer is blamed,—blamed, too, by a colleague in a formal report. One may well believe that Dr. Shirreff did his best in the face of official obduracy, and civic neglect; yet that does not relieve him. He was the officer responsible.

Dr. Charles A. Hodgetts, the medical officer of the Conservation Commission, has performed his duty thoroughly and fearlessly, and it must have been an extremely unpleasant one. There has never been a clearer exposure of civic incompetency, and the logical outcome is that the community itself should be penalized for destroying the lives of those who are compelled to live within it. Dr. Hodgetts puts the facts nakedly when he recommends that a metal tag be attached to each water-tap with an inscription in French and English: "The water drawn from this tap may at times contain a virulent poison."

The first business of a community, civilized or uncivilized, is to provide itself with some arrangements, primitive or complicated, by which it shall avoid the necessity of eating, drinking, or re-breathing, its own excretion. This is the end and aim of all hygiene and sanitation. The easy device which savage people practice is to move away from a locality which has become so defiled that existence is no longer bearable or even possible. But as soon as they erect habitations for themselves they become indisposed to pursue this migratory policy and endure, as well as they can, the evils which they created. Pestilence and plague are the results, until a merciful fire sweeps away the whole abomination, and allows of a repetition of the offence. But as these habitations become more durable, and brick and stone replace straw and wood, the remedy of fire is less generally applicable, and the pestilence goes unchecked. To abandon the sites of Ottawa, Montreal, Kingston, and Toronto, for example, would be inconvenient, and the edifices are too well built to hope much from the salutary fire.

A better way had to be found. Accordingly sewers were constructed to carry off the refuse, and pipes were laid to carry water. But the indiscretion was committed of drawing the water from the receptacle into which the sewage had been discharged. By a rare feat of ingenuity, however, the intake for the water was placed at some little distance from the discharge for the sewage. Under the best conditions this merely meant that a community was satisfied if it did not consume its own sewage. It was still content to poison a community lower down the river, and to be poisoned by a community which had its habitation higher up. Cities in Canada may be divided into two classes, according as their inhabitants are poisoned by themselves or by their neighbours. Toronto and Kingston fall into the first class; Montreal in the second, and Ottawa in both; but all four poison their neighbours indiscriminately.

The difficulty has arisen out of our failure to understand that a river is designed to drain a country. It always lies at the lowest level of the land through which it passes. Its very excellence as a drain is precisely the quality which makes it the worst possible source of supply for water which is to be drunk. In Europe the people have made the discovery that this drain may be used to sail boats on; it never occurs to them to drink of its water. The Romans made the same discovery. They employed the rivers for legitimate purposes, and sought their water supply at the proper source. In all the regions which they occupied there yet remain the ruins of those splendid aqueducts by which they brought water from the clean hills. We are content to bring our drinking supply in an open ditch from a polluted river.

The degree of civilization to which a community has attained may be judged by the number of deaths which occur from typhoid fever. It is an index of the regard in which cleanliness of living, and even life itself, is held. Before setting forth in all its enormity the death rate from typhoid which prevails in the cities of Canada, it will be advisable, for the sake of erecting a standard for comparison, to cite the rate for European countries. In Scotland the deaths from typhoid during the years 1901-05 were 6·2 per hundred thousand of the population; in England and Wales, 11·2; in Germany, 7·6; in Belgium, 16·8; in Austria, 19·9.

According to the latest returns, the death rate in Canada is 35·5, which is higher than in Hungary, where it is 28·3; in Italy, where it is 35·2; and only lower than in the United States, where it is 46 per hundred thousand of the population.

Let us now consider the state of affairs in the various cities of Canada in the light of statistics supplied by Dr. Charles H. Hodgetts in another report. When it is considered what Scotland has achieved, and that a death rate from typhoid of over twenty per hundred thousand of the population is evidence of gross carelessness, the full significance of the figures will be appreciated. In Edmonton, from 1901-1909, the death rate from typhoid fever per one hundred thousand of population, was: 75·4, 20·0, 32·3, 37·5, 40·0, 254·3, 180·0, 110·0, 76·0. In Winnipeg the rate was: 118·3, 95·0, 82·8, 248·3, 175·0, 108·8, 49·2, 40·5, 38·4. The figures are not to be obtained during all of these years for Fort William, but such as are given disclose the following state: 88·6, 200·2, 132·6, 946·9, 98·5, 94·0. In the province of Quebec, the highest rates, in the cities quoted, are those given for Sherbrooke: 476·6, 227·0, 60·8, 60·8, 30·7, 52·3, 21·6, 108·0, 131·4, 78·4. Of the two largest cities fronting on the chain of the Great Lakes and the St. Lawrence, Toronto has a comparatively low rate, though during the years 1906-1909, the figures have risen to 24·8, 19·4, 19·8, 25·7. During

1900-1909, the rates for Montreal were: 42·6, 44·4. 30·9, 31·4, 31·8, 18·1, 37·0, 33·2, 33·1, 53·8.

These figures have been selected as showing the highest rates. Other cities, such as Vancouver, Victoria, Hamilton, Quebec, Halifax, and Charlottetown, have figures, as a rule, well under the twenty per cent. danger mark. But it is worth remarking that in Charlottetown, where the latest rate is given as 8·3 the water supply is drawn from springs; in Halifax, where the rate was 4 per hundred thousand, the water is drawn from a series of well-guarded lakes; and in Quebec, where the rate was 5·3, the water is drawn from the Laurentian Hills.

If, now, the chief cities of the United States, which border on the Great Lakes, be considered, it will be found that the death rates from typhoid are higher and vary less than those of the cities quoted for Canada. Niagara Falls from 1900-1908, has the following high rates: 107·9, 143·9, 130·4, 126·9, 139·8, 181·6, 147·3, 126·8, 98·0, and Sault Ste. Marie has: 132·9, 92·9, 172·9, 115·9, 52·4, 68·6, 58·9, 16·5, 72·9. Of the twelve cities from which returns are available, only two, and those, curiously enough, Chicago and Milwaukee, have rates which would suggest care and supervision of a water supply.

Strange as it may appear, the discovery of methods for the purification of sewage have harmed rather than helped, since they have confirmed people in their habit of discharging sewage into the rivers from which they drink. The real object to be attained is to prevent rivers from becoming offensive, since no method has been discovered for reducing sewage to such a point of purification that it may be drunk. The plants, which are being erected at enormous cost to filter water, and the sewage farms which are being built, are merely postponing the time when we shall have pure water to drink. Instead of working towards a supply which has always been pure we are wasting our time in purifying water which has already been hopelessly polluted. The proper method is to obtain the purest supply and then purify it still further by filtration. Liverpool has shown us the way. Its water is obtained from a stream rising in the mountains of Wales, the watershed of which is owned or controlled by the city. This circumstance is not, however, depended upon to ensure the entire safety of the water, for it is filtered through slow sand filters before being delivered to the consumers.

The necessity for the purification of sewage may be considered from two points of view; first, with regard to the organic matter which it contains, and, second, with regard to its germ contents. The inevitable fate of the organic matter is to pass through certain processes of decomposition and oxidation whereby it is ultimately reduced to harmless mineral forms. Under natural conditions this may cause nuisances and conditions offensive to the senses. The main object of sewage disposal, as at present understood and practised, is to prevent this, and to cause the oxidation changes to take place under controllable conditions, quickly, inoffensively, and to such a degree as will at least produce a stable effluent, incapable of undergoing further changes of an objectionable character. All modern methods of treatment are capable of accomplishing this, but without greatly diminishing the number of bacteria present in the raw sewage; therefore, for the purpose of destroying the germs which cause typhoid, nothing is effected. A false security is created by guarding only against visible pollution, and the people continue to be poisoned.

The Canadian Society of Civil Engineers, by means of a committee, completed an important survey of the sanitary condition of Canada, and the chairman, Mr. R. S. Lea, wrote a most valuable report, which was promptly buried in the report of the annual meeting of 1911, from which the present is the second attempt to rescue it. For the purpose of obtaining definite information the list of questions was sent to all places in Canada with populations of one thousand or over. This list was sent to three hundred and twenty-seven places, and replies were received from one hundred and sixty-six. Only eighteen places reported any kind of purification, and in twelve of these it is limited in its nature. Of the one hundred and sixty-six places reporting, one hundred and forty-five have water-works. Of these only thirty-six have supplies from underground sources; forty-four obtain their supply from small lakes and streams in practically uninhabited watersheds; twenty-five from the Great Lakes and the St. Lawrence and Ottawa rivers; and forty from other lakes and streams which are liable to contamination by sewage. From the information furnished by these replies, the committee reports "that not much has yet been done in Canada in the way of purification of either water or sewage."

After a complete analysis of all the replies received and a general consideration of the whole question, the committee summarized its conclusions as follows:

1. None of the methods of sewage disposal, which are feasible and economically applicable on a large scale, can be relied upon to effect complete purification.

2. The distinction between the general surface drainage of a populated district and its urban sewage is one of degree only, and each in itself may render the water into which it discharges, unwholesome and dangerous for drinking purposes.

3. Since much of the surface drainage cannot be even collected for treatment, and since sewage disposal processes in the present state of the art cannot be depended upon to effect complete bacterial purification, it follows that the raw waters of rivers and lakes in populated districts can never be considered entirely safe and fit for domestic supplies.

4. Experience has shown that water of even a considerable degree of pollution can be rendered pure and wholesome by filtration, and, for practical purposes, this is the only reliable means of ensuring the safety of surface supplies from unprotected watersheds.

5. Towns and cities which take their supplies from suspicious sources should not depend for their safety upon the efforts of others, but should themselves adopt such precautions as are available.

6. In Canada, up to the present time, practically nothing has been done in the way of purifying the sewage of municipalities, except in the case of less than half a dozen places in the province of Ontario.

7. The Public Health Acts of the different provinces provide in a general way against the discharge into bodies of water of matter which would cause nuisances, or which would endanger the public health. Such laws lack definiteness, and are, therefore, generally ineffective.

What has been brought about in the way of reform in Great Britain has not been the result of a day. It was not until 1858 that pollution was prohibited in England. In 1861 an Act was passed requiring sewage to be purified and freed from putrescible matters before being discharged into streams. From then until to-day the question has been dealt with by many Acts, and considered by many commissions, and although all difficulties have not yet been overcome, one most important precaution has been taken, namely, the purifying of the whole of the sewage before discharging it into any water course.

In Canada the matter is complicated by the fact that many of the sources of water supply are not only interprovincial, but also international. The Great Lakes, for example, receive a portion of their waters from Minnesota, Michigan, Ohio, New York, Vermont, New Hampshire, and Maine, as well as from the contiguous Canadian provinces. So that to take steps to ensure cleanliness in the water supply of the country will demand that the Federal governments of the two countries deal with the matter. The restrictions imposed at present against polluting water ways are largely municipal, and, as such, each community is concerned chiefly with attempting to keep pure its own particular water supply, without considering whether or not the disposal of its sewage will contaminate the supply of others. Fortunately there are now means by which this joint control can be undertaken by the governments of Canada and of the United States, under a treaty which was signed on January 11th, 1909, and ratified on May 5th, 1910. The main object of this treaty was to prevent disputes regarding boundary waters, but incidentally provision was made to prevent their pollution by communities dwelling upon either banks. Under this treaty it is now provided that all questions and matters of difference arising between the two countries, involving the rights, obligations or interests of either in relation to the other, shall be referred to a commission for examination and report.

The death rate from typhoid in Canada is thirty-five per one hundred thousand of the population. Accordingly, about three thousand persons die every year from the disease. Now, as only about ten per cent. of all patients affected die, it follows that thirty thousand persons are attacked in Canada every year. In addition to the suffering and grief caused by the disease, the drain on the efficiency of the community is enormous by the withdrawal of so large a number of the people from useful employment.

By combining the life value of individuals at different ages with the age distribution of persons dying of typhoid fever, the resulting average value of persons dying from typhoid fever is found to be $4,634. If to this be added cost of nursing, attendance, and loss of wages, the cost will easily reach $6,000. According to the census of the United States for the last year for which complete returns are available, 35,379 deaths occurred from typhoid fever. If it be assumed that each of these represents a loss to the community of $6,000, the total amount is found to be $212,000,000. Of these deaths probably three-quarters could have been prevented; that is, the needless loss of vital capital was about $150,000,000; and the same loss is repeated every year.

To demonstrate what can be done to reduce the death rate, the experience of two adjacent cities in the United States may be applealed to. For four years in Albany before an efficient water supply was secured the rate averaged one hundred and four per hundred thousand. In the next four years it decreased to twenty-six. In Troy, where no alteration was made in the water supply, the rate remained identical during the two periods.

When we reflect upon what has been done in Europe, the shame for our neglect will be the greater. Here we are practically free from the poverty which oppresses Europe. Our population is scattered over an enormous area, whilst in Europe a population of one hundred and seventy-eight billion is crowded into an area little greater than that of the Maritime Provinces, Quebec, Ontario, and Manitoba, which contain fewer than seven million people.

A.M.

NEWFOUNDLAND

DIPHTHERIA is prevalent in St. John's. Most of the cases are among children of from five to twelve years of age. Several deaths from the same disease have occurred at Torbay.

A HOSPITAL is to be opened this winter at Mud Lake, Hamilton Inlet, by Dr. A. W. Wakefield, of the Grenfell Mission. The hospital at Battle Harbor is to be closed during the winter.

SOME extensive improvements have been made to the General Hospital at St. John's, one of the most important being the addition of a Nurses' Home, which is to be called the "King Edward the Seventh Home for Nurses." This is now completed, and it is the intention that the rooms which have been occupied by the nurses shall be converted into wards.

Retrospect of Surgery

GASTROCOLOPTOSIS. BY THORKILD ROVSING, COPENHAGEN, *Journal of the American Medical Association*, August 3rd, 1912.

THIS paper is a very able exposition of Rovsing's theory of the causation and treatment of gastrocoloptosis. He discards the "diathèse hépatique" theory of Glénard, as well as Stiller's theory of congenital universal asthenia, and says that an explanation for this condition, which is met with almost exclusively in women, is to be found in the misuse of corsets and laces and in the changes in intra-abdominal pressure following pregnancy and parturition.

Rovsing divides these cases into two classes—virginal and maternal gastrocoloptosis. In the first group, the onset of symptoms occurs at or about puberty when corsets are first worn. The previously healthy individual begins to suffer from persistent constipation, followed by lassitude, headache, and distaste for food. Still later, severe pains develop—always to the left of the median line and following the ingestion of food, the quantity and not the quality of the food being the exciting cause. In many instances the pain is accompanied by vomiting, and the subsequent state of nutrition depends largely upon the quantity of food ejected. When vomiting is severe, emaciation may reach an extreme degree, and the patient presents the aspect described by the writer as gastroptosis-cachexia. The chemical function of the stomach may be normal or show variations, either in the way of achylia or hyperacidity. In a majority of the cases the motor function is absolutely normal. In many of these patients nervous symptoms gradually develop: such as a feeling of oppression across the loins, in the pelvis, and in the abdomen, palpitation of the heart, physical depression, et cetera. Finally, the menstrual function is suppressed or becomes deranged. The pain in virginal ptosis is much more severe than in the maternal form. This, in the author's opinion, is due to the transverse folding of the stomach and colon with the development of angles and bends which retard the natural passage of the food. These deformities in the viscera are absent in the maternal form, owing to the greater space afforded by the loss of the elastic support of the abdominal muscles.

In a certain number of cases, the transverse folding of the stomach leads to hour-glass deformity. In fact, Rovsing considers that to this condition rather than to congenital malformation or cicatricial contraction following ulceration, is to be attributed the development of hour-glass stomach. All stages of hour-glass formation have been observed by the writer. In all of them the first symptoms of the disease occurred during the years of puberty. The hour-glass formation he considers to be due simply to the consolidation of adhesions which form between the inverted surfaces of the stomach, as above described.

The differential diagnosis between virginal ptosis and gastric ulcer, colitis, and hysteria, is discussed.

In the second, or maternal form, of gastrocoloptosis there occurs a sagging of the coils of the small intestine followed by coloptosis and eventually by ptosis of the stomach and liver, the extent depending upon the resistance to stretching offered by their suspensory ligaments. In severe forms of the affection, the transverse colon, suspended at either flexure, reaches to the bottom of the pelvis, where it is anchored by the weight of accumulated fæces. In the maternal form, constipation is the dominant feature; the attacks of cardialgia and vomiting are much less striking and may be entirely absent. In time the patients become emaciated and sallow and have an ever increasing sense of prolapse. The coprostasis may attain such a degree that attacks resembling obstruction occur. The stretching of the suspensory apparatus of the stomach may be so great that volvulus ventriculi occurs.

It is characteristic of both forms of the disease that all the symptoms complained of, including the constipation, improve or vanish entirely upon confinement to bed, while they at once recur or become worse on the resumption of the upright position.

TREATMENT. In certain cases of the maternal form of gastrocoloptosis, Rovsing recommends the use of a large, well-padded pelotte, held in position by a steel spring belt. To be effective the pelotte must be adjusted with the patient in the recumbent position, and must support with a strong and unchanging pressure a wide area of the hypogastrium. Such a support is, however, usually ineffective in virginal gastroptosis and in those severer cases of maternal gastroptosis in which the transverse colon has subsided into the small pelvis. For these cases, Rovsing recommends the operation of direct gastropexy, first practised and described by him in 1897. The technique is, briefly, as follows. Parallel with the lesser curvature three strong silk threads are passed in and out through the serous coating of the anterior surface of the stomach, leaving the pars pylorica free. The upper thread is placed close under the lesser curvature, and the two others, with an interval of about 2 cm., are placed in such a way that the greater curvature and a rather broad space above it are left free. Next, the parietal serosa and the serosa between the threads is scarified with a fine needle as well as that part of the under side of the liver to which one wishes the stomach to adhere. The ends of the silk thread are led out through the entire thickness of the abdominal wall, those on the left as far from the centre line as the costal arch permits, those on the right about 3 cm. from the middle line. The parietal peritoneum is now closed with catgut, and the fascia and skin with whatever one is accustomed to employ. After the wound has been protected with collodion and cotton wool, the silk sutures are tied over a glass plate covered with sterile gauze, the plate being a little larger than the stomach surface to be fixed. By this method the anterior surface of the stomach is made to lie flat against the anterior abdominal wall without shrinkage or folding. The sutures are withdrawn at the end of four weeks.

Of two hundred and fifty-six cases operated upon in this way by Scandinavian surgeons, 75 per cent. were cured to the extent of being relieved of their pains, or regaining their strength and a healthy appearance, and of being changed from incapable, depressed, miserable wrecks into able-bodied, healthy, and happy people. The mortality from the gastropexy proper is only 1·17 per cent. In 11 per cent. of the cases there was considerable improvement. In 12·8 per cent. the improvement was insignificant or nil. Rovsing urges that where ptosis of the liver co-exists, hepatopexy should be performed simultaneously with gastropexy. He found this operation necessary in sixty-eight out of a total of one hundred and sixty-three cases operated upon by him for gastroptosis.

Obituary

Dr. Alice McGillivray, of Hamilton, died suddenly October 30th. Mrs. McGillivray was the first woman student to take the medical course at Queen's University, and was a medallist in both arts and medicine. When the Kingston Medical College for Women was opened, Mrs. McGillivray became the vice-dean, a title which she held for five years. She first took up her professional work at Chicago, and afterwards went to Hamilton, where she has resided for the past fifteen years.

Dr. John Harrison O'Donnell, one of the best known physicians of Winnipeg, died October 26th, in the sixty-ninth year of his age. His career was one of unusual interest. He was born in 1844 at Simcoe, Ontario, and there received his early education. Later Dr. O'Donnell went to Victoria University and graduated as M.D. in 1861. In 1869 he went to Winnipeg, and in the following year was appointed to the provincial senate, of which he remained a member until its abolition in 1875; during part of that time he was speaker. In 1872 he was appointed a member of the Board of Education. Dr. O'Donnell took an active interest in the suppression of the Riel rebellion; for ten weeks he was imprisoned by Riel, and afterwards, as justice of the peace, signed the warrant for the arrest of Riel and others. In addition to his professional duties and the part he played in the public affairs of his time, Dr. O'Donnell was the author of a work entitled "Manitoba as I saw it, from 1869 to date" (1910). Although during recent years Dr. O'Donnell did not take so active a part in public affairs, he still continued his practice and during the forty-three years he spent in Winnipeg he held may important positions, being first president of the Manitoba Board of Health, a member of the first council of the Manitoba University, and also of the University Board of Medical Examiners. His loss will be felt keenly by those with whom he worked and among whom he had made many close friends.

Dr. William Hamlen died at Toronto, October 26th, in the fifty-eighth year of his age. Dr. Hamlen was born at Goderich, Ontario, and was a graduate of the Detroit School of Medicine. He also took post-graduate work at McGill University and was closely identified with the Michigan College of Medicine, of which he was vice-president.

Dr. Edwin Fleming Jeffries, of the Hamilton Hospital for the Insane, died from typhoid fever on October 16th. Dr. Jeffries was born in London, Ontario, and was twenty-six years of age.

Dr. R. H. Winter, of Lambeth, Ont., died at Queen Charlotte, B.C., September 16th. Dr. Winter was surgeon in charge of the government hospital and his death was the result of a fall.

Dr. H. G. Storey, of Blenheim, Ontario, died November 5th, in the forty-seventh year of his age. After graduating from Toronto University, Dr. Storey began his professional work at Blenheim, and has practised there for the last eighteen years. He was a prominent member of the Masonic Brotherhood. He was also a keen politician and was several times president of the County Conservative Association.

Dr. J. T. Duncan, of Toronto, died in California on Tuesday, November 5th. Dr. Duncan graduated in 1882 from the University of Toronto and afterwards practised there for some years. Later he went to England, where he made a special study of the eye and ear, and on his return to Toronto he devoted himself to that particular branch of the profession. Dr. Duncan was well known in Toronto and was oculist at the Western Hospital, lecturer in anatomy at what is now the Ontario Veterinary College, and one of the first government coroners in Toronto. He leaves a widow and two sons.

Dr. William J. Roe died at Georgetown, Ontario, in the seventy-fifth year of his age.

News

MARITIME PROVINCES

A MEETING of the New Brunswick Medical Board took place at St. John, November 5th. Among those present were Dr. B. M. Mullin, Dr. Jones, Dr. Sprague, and Dr. A. J. Murray. The meeting was principally concerned with the reorganization of the board. The free distribution of antitoxin and serums was also considered, but the question was left to be discussed at a later meeting.

THIRTEEN cases of diphtheria, twelve of typhoid, and nine of scarlet fever were reported in St. John during October, 1911; this year there have been no cases of diphtheria, only five of scarlet fever, and nine of typhoid.

ONE thousand two hundred and seventeen school children have been examined by the medical inspector at Amherst, N.S., with the result that eight hundred and eighty-nine cases have been referred to physicians for treatment. The figures given above cover the period from February, 1911, when the examinations were commenced, until June, 1912. The result has been most satisfactory and of benefit both to the child individually and to the school as a whole.

EIGHTY-NINE deaths from tuberculosis occurred in St. John last year. This number is somewhat less than during previous years, but there is still room for improvement. A great deal has been accomplished by the dispensary towards the prevention of the disease, but a sanitarium for advanced cases is badly needed.

As yet there is no medical inspection of the children in the public schools of St. John. The results obtained in other cities have been satisfactory and many citizens are of the opinion that some such examination should be instituted in the schools there.

ONTARIO

Two hundred thousand dollars have been granted by the city of Toronto to the King Edward Memorial fund for hospitals.

Over five thousand dollars have been collected by Miss Lewis, of Hamilton, and have been given by her to the city for the purpose of building a children's hospital.

Dr. T. G. Roddick, of Montreal; Dr. George Kennedy, of MacLeod, Alberta, and Dr. Walter Bapty, of Victoria, have been appointed members of the Dominion Medical Council.

At a recent meeting of the Ottawa city council the following resolution was passed: "That in view of the two recent serious typhoid epidemics which Ottawa has experienced, this council wait upon the Right Hon. the Premier to urge upon the Dominion government the vital necessity of creating a department of public health, so that effective means may be taken to protect all drinkable streams from pollution."

At a meeting of the Ottawa board of health on November 1st, a resolution was passed approving of the suggestion that a municipal abattoir should be established.

At the beginning of November there were seven cases of smallpox in the Swiss Cottage Hospital at Toronto.

In Toronto, during the seven months from April to October, the death rate for acute contagious diseases was 85 per 100,000 population. This is less than last year, when the rate was 102 per 100,000.

One hundred and fifteen cases of infectious disease have been reported in Brantford during the past twelve months. The amount of typhoid this year has been very much less than last year, only twenty-four cases having been reported as compared with fifty-five last year. Tuberculosis, on the other hand, has somewhat increased, twenty-two deaths having occurred this year and fourteen last year. During the year, two hundred and sixteen deaths occurred, and of these eighty-four were infants of less than one year of age.

The amount of typhoid in Fort William has been much less this year than last. From June 1st to September 1st, only thirty-three cases were reported, whereas during the same period last year there were fifty-six cases. This improvement is largely due to the more satisfactory water supply.

At a meeting of the board of directors of the Guelph General Hospital, held November 4th, it was decided to ask the city council to submit a by-law at the January elections asking for twenty-eight thousand dollars. If this sum is granted, it is proposed to make some repairs and alterations to the east wing of the hospital. A by-law for the same purpose, asking for twenty-five thousand dollars, was submitted last summer, but it was defeated. It is hoped that conditions will be more favourable in January.

At a meeting of the Chatham board of health on November 4th, it was decided that although the landlord is responsible for the disinfecting of a house, the cost of doing so will be borne by the board of health. It was considered that, as disinfection is a matter of public safety, it should be paid for by the public. On this occasion, a motion was also carried asking the council to submit a by-law which would require that all bread should be wrapped before leaving the bakery.

A medical research fund has been subscribed by the business and professional men of Toronto. The fund, which will amount to from twenty to fifty thousand dollars a year, is the result largely of Dr. McPhedran's efforts. The research work will be directed by a committee consisting of Dr. Falconer, the president of the university; Dr. McPhedran, Dr. Clarke, Dr. Leathes, Dr. Brodie, and Dr. Mackenzie. A portion of the fund will be devoted to research work in tuberculosis.

One hundred and one cases of tuberculosis and sixty-seven deaths occurred in Ontario during October; one hundred and seventy-three cases of typhoid fever, resulting in thirty-six deaths; two hundred cases of diphtheria, resulting in twenty-two deaths; one hundred and forty-four cases of scarlet fever with one death; thirteen cases of infantile paralysis with one death; five cases of small-pox; one hundred and twenty-six cases of measles with one death; thirty-four cases of whooping cough, resulting in four deaths; and two cases of spinal meningitis, both of which were fatal. In all, seven hundred and ninety-eight cases of infectious disease, one hundred and thirty-four of which terminated fatally. This is rather less than last year, when there were eight hundred and forty-two cases, and one hundred and twenty-eight deaths during October.

The eighteenth annual meeting of the Ottawa Maternity

Hospital was held November 5th. The superintendent stated that four hundred and three patients had been admitted during the past year and two deaths had occurred. The treasurer's statement showed a balance on hand of $267.31. More accommodation is needed in the hospital and during the last few months it has been impossible to admit all those who wished to enter the hospital as there was no room for them. What is needed is another wing, and it is hoped that it will soon be possible to add this to the present building; the cost would be about $75,000, and an effort to collect this amount is to be made shortly. An elevator has recently been placed in the hospital at a cost of $6,000.

A HOSPITAL to cost fifty thousand dollars is to be erected at Cochrane. The site has been given by the Timiskaming and Northern Ontario Commission, and it is probable that twenty thousand dollars will be given by the Toronto Board of Trade; this sum is the balance of the money contributed for the relief of those who suffered from fires in Northern Ontario last year.

A NEW wing, which is to be called the Empire wing, is to be added to the Kingston General Hospital. The corner-stone of this wing was laid by Mr. B. W. Robertson, a member of the board of governors, on Thursday, October 17th.

SEVERAL cases of typhoid have occurred in the Hamilton Hospital for the Insane.

A BY-LAW has been introduced, and will be submitted to the ratepayers next January, to grant two hundred and fifty thousand dollars to the Hospital for Sick Children at Toronto.

THE Hospital for Consumptive Children near Weston is almost completed. It will provide room for one hundred children. There are already twenty children waiting to enter the hospital; temporary accommodation has been provided for them in the meantime. The total cost of the hospital is about fifty thousand dollars.

DURING the year ending September 30th, 1912, eleven hundred patients received treatment in the Guelph General Hospital.

AN interesting account of the work that is being done by the Parkdale Hospital for Incurables, Toronto, was given at the annual meeting on Friday, October 25th. At present there are one hundred and eighty-three patients in the hospital; eighty-five of these were admitted during the past year, seven were discharged, twenty-seven died, and three were sent to the asylum. The total number of deaths during the year was fifty-six, twenty of these being due to cancer. The city has been contributing a per capita grant of thirty-five cents a day; but this sum has now been augmented to fifty cents. The daily cost for each patient is about seventy-four cents. The financial report for 1911 shows a deficit of $10,257; the increased civic grant, however, will do much to reduce this amount.

As a means of the prevention of slums, Dr. Roberts, the medical officer of health for Hamilton, has decided to issue weekly bulletins on general health work. The information contained in the bulletin will be both interesting and instructive to the general public.

The sixteenth annual report of the trustees of the Sarnia General Hospital was submitted last month. During the past year, five hundred and twenty-three patients have been treated in the hospital, and among these were eighty-eight cases of typhoid fever and one hundred and thirty-one surgical cases. There were sixty births and fifty-seven deaths.

The medical superintendent of the Hamilton Hospital stated in his annual report that almost four thousand two hundred indoor patients had been treated during the past year, three hundred and thirty-three deaths had occurred, and the total expense of conducting the hospital had been $104,318. The per capita cost per day was $1.26. The advisability of increasing the rates for patients in semi-private wards was discussed. It was suggested that these rates should be advanced from $4.90 to $7.00 a week. The rate of $4.90 was charged because the government gave a grant of thirty cents a day in cases where the charge made did not exceed $4.90; but the Act has since been amended, and the grant is now given if the charge made is not more than $7.00. During the past year the receipts from patients have amounted to $48,687, and the civic grant has amounted to $42,220.

At a meeting of the Associated Charities of Toronto, which took place November 11th, it was suggested that a building should be rented and used as a temporary hospital, where persons mentally deranged and convicted of crime, could be detained. It is proposed to build a hospital for the purpose, the cost of which is estimated at about one hundred thousand dollars.

A DECISION has been come to in regard to the tuberculosis sanitarium which is to be established in Essex county. The sanitarium is to be built at Union. The plans have been prepared and forwarded to the provincial board of health for approval and the building will be commenced at the earliest moment possible.

THE seven district officers of health recently elected for the the province of Ontario have completed the special course in public health, given under the direction of Dr. McCullough, and have taken up their duties in the respective districts allotted to them.

AT the meeting of the Dominion Medical Council in Ottawa, November 7th and 8th, the following officers were elected: president, Dr. Roddick, Montreal; vice-president, Dr. Thornton, Deloraine, Manitoba; registrar, Dr. R. W. Powell, Ottawa; executive committee, Dr. McKechnie, Victoria; Dr. Hardy, Toronto; Dr. Stewart, Halifax; Dr. Brett, Banff; Dr. Spankie, Wolf Island; and Dr. Normand, Montreal.

QUEBEC

THE sixth annual report of the Hospital for Incurables at Notre Dame de Grace was issued recently. The receipts for the year ending June 30th, 1912, amounted to $74,388.13, of which $1,000 was granted by the government and the greater part of the remainder subscribed, and the expenditures amounted to $71,059. Three hundred and fifty-seven patients were admitted during the year, two hundred and four died, and one hundred and sixty were discharged.

UNLIKE most cities, as yet Quebec has made no provision whereby its ambulances will be accompanied by a physician. The ambulances are not attached to the hospitals and are accompanied by a policeman and a fireman only. Needless to say, this arrangement is by no means an ideal one. The matter is now under the consideration of the civic health committee.

THERE is a good deal of small-pox throughout Quebec. Two deaths have occurred from the disease, one at Beauharnois and one at St. Laurent, where thirty cases are reported. At Valleyfield there are at least twenty-five cases. Precautionary measures are being enforced by the provincial board of health, but there has been some negligence on the part of local practitioners in reporting cases, and in more than one instance people suffering from a mild form of the disease have been allowed to continue to perform their daily duties.

OVER thirty cases of small-pox are being treated in the Montreal isolation hospital; four of these patients are from one family.

SEVEN hundred thousand dollars have been guaranteed to the Notre Dame Hospital at Montreal by a committee formed for this purpose. Each member of the committee will be responsible for $35,000. This sum will not only relieve the hospital of its financial difficulties, but will also make it possible for the trustees to devote the government grant to the purchase of necessary equipment, etc. The interest and sinking fund on the $700,000 will be $54,000 a year, which will be payable for twenty years, when the hospital will be free from debt. An appeal will be made to the public to subscribe the $54,000 required each year, and this appeal, one feels sure, will meet with a generous response.

A HOSPITAL is to be erected by members of the Salvation Army in Montreal to the memory of the late General Booth. The site has been purchased at a cost of $35,000 and the name of the hospital is to be the "General Booth Memorial Hospital."

THE third annual report of the Royal Edward Institute shows that the receipts during the year have amounted to $11,892, while the amount expended has been $12,285, leaving a deficit of $393. On reading the report, Lieutenant-Colonel Burland spoke of the great need of an institution for the treatment of advanced cases of tuberculosis in Montreal. The site for such a hospital has been secured and certain citizens are prepared to erect a building at a cost of one hundred thousand dollars, if the city and the province will undertake to provide twenty thousand dollars a year for the maintenance of the hospital.

IT is proposed to establish another hospital in Montreal for children under two years of age. In spite of all that has been accomplished by the Foundling Hospital, there is still great need for further work of this nature, as is clearly indicated by the fact that during the past year nearly four hundred infants were refused admittance by the Foundling Hospital in consequence of lack of space. The death rate amongst children under one year of age in Montreal is two hundred and fifty per thousand, the third highest infant mortality rate of any city in the civilized world.

The Ste. Justine Hospital at Montreal is to be extended to make provision for six hundred more children than the present building can accommodate. Four hundred and six children were admitted during 1911 and fifty-nine deaths occurred; a large proportion of these succumbed within forty-eight hours after admission to the hospital.

MANITOBA

The establishment of a hospital at Rosetown is now under consideration.

An earnest appeal is made by the trustees of the Winnipeg General Hospital for more generous support by the citizens. As the city expands the work of the hospital grows, and as a natural consequence the expenses increase. The total daily income is now $500, and the daily expenses amount to $600. This means that there is a daily deficit of $100. As is the case in other hospitals, there are a great many patients who are unable to pay anything towards their maintenance and treatment; the average cost per day of providing for each of these patients is $1.92, so that a loss is sustained by the hospital notwithstanding the municipal grant of one dollar and the government grant of twenty-five cents for every such patient.

SASKATCHEWAN

A site for a hospital at Rosthern has been granted by the Dominion government. The hospital will be called the "Alexandra Hospital."

The hospital at Wakaw is to be enlarged and it is probable that a new building will be erected.

MISS C. L. SHAW, of Hamilton, Ont., has been appointed matron of the Victoria Hospital at Prince Albert, in the place of Miss Lockerbie, who resigned recently. A new staff of nurses and orderlies has also been secured. In the monthly report, the superintendent stated that on September 1st, there were nineteen patients in the hospital, twenty-seven were admitted during the month, and twenty-one were discharged; four deaths occurred and fifteen operations were performed. At a meeting of the hospital board, which took place October 8th, the unsanitary condition of the present isolation hospital at Prince Albert was discussed. It was decided to build a new hospital and to take up the matter with the city council.

A HOSPILAL is to be built at Canora. The necessary money has been given by Dr. A. S. Grant, the superintendent of home missions for the Presbyterian Church, Peterborough, Ont. A site six hundred feet square has been secured and it is proposed to place the hospital in the centre, and later on to build an isolation hospital, a nurses' home, a children's home, and a doctor's residence, all of which will be placed near the hospital.

IT is probable that a bacteriological laboratory will be established in connexion with the Moose Jaw Hospital.

Although the number of cases of typhoid compares favourably with last year's returns for the same month, there has been a good deal of typhoid at Moose Jaw. On October 24th, there were about seventy-five cases in hospital.

THE Grey Nuns Hospital at Regina was formally opened by H. R. H. the Duke of Connaught on Sunday, October 13th.

HOSPITALS are being established by the Railway Mission in isolated places on the prairie. Accidents and sickness are very common in such places and the need of hospitals is great. The first to be established is one that is now being built at Davidson; the foundation stone was laid on October 14th by H. R. H. the Duke of Connaught.

ALBERTA

IT is proposed to build a hospital on Bow Island. A hospital board has been elected and it is expected that the greater part of the necessary funds will be provided by private subscriptions.

It is probable that the Galt Hospital at Lethbridge will be taken over by the city. A communication from the trustees in connexion with the matter was received at a recent meeting of the Lethbridge city council.

The report of the medical officer of health for Lethbridge shows that there has been comparatively little typhoid during the months of July, August, and September. In July there were five cases, in August four, and in September twelve. There were thirty-one cases of measles during July, but, apart from this, there has been little disease of an infectious nature.

According to the *Edmonton Journal*, a great many cases of typhoid fever have occured in the immediate neighbourhood of the hospitals. Dr. Whitelaw, the medical officer of health, criticizes very severely the lack of precautionary measures against infection, and censures particularly the negligence of householders whose houses are placarded as containing typhoid patients. As a means of preventing the further spread of the disease, Dr. Whitelaw has issued instructions to the public as to the best means of preventing infection.

The Oddfellows' Hall at Edmonton is being converted into a hospital. The new hospital will make provision for forty patients, whereas the old building could only accommodate fifteen.

The outbreak of typhoid in Edmonton is now practically over. During October fifty-eight cases were reported, a much smaller number than during the preceding month. Other cases of infectious diseases reported are: twenty cases of diphtheria, six of measles, three of scarlet-fever, and two of chicken-pox.

A committee was recently appointed by the Edmonton city council to enquire into the question of hospital grants. Application had been made by the Royal Alexandra Hospital for $250,000, and by the South Side Hospital for $300,000. In addition, the Sisters of the Misericordia Hospital requested that $200,000 be granted to them in order that they might increase their accommodation to two hundred beds. The enquiry resulted in a recommendation being made to the council by the committee that a grant of $180,000 be made to the Royal Alexandra and of $150,000 to the South Side Hospital. It was considered that the latter hospital could build one wing next year, and later could make further extension as it was found necessary to do so. At a meeting of the council on October 29th, in accordance with the above recommendation a grant of $150,000 was made to the South Side Hospital, but the grant to the Royal Alexandra was increased to $225,000. No definite decision was made concerning the grant asked for by the Misericordia Hospital.

THE establishment of a municipal hospital in Calgary is a question which is receiving the consideration of a committee appointed to enquire into the matter. It was suggested that the old isolation hospital should be converted into a municipal hospital, but the proposal was not favourably received. As yet no definite decision has been made.

BRITISH COLUMBIA

SCARLET FEVER has broken out at Rossland and it has been necessary to open a temporary isolation hospital.

THE Vancouver Isolation Hospital is now completed. The cost has been about seventy-five thousand dollars.

AT a meeting of the Vancouver Hospital board, held October 29th, it was suggested that the municipalities of South Vancouver, Point Grey, and Burnaby should contribute to the support of the hospital. The chairman stated that during the nine months ending September 30th, two hundred and forty-four patients had been received from South Vancouver, sixty-one from Point Grey, and thirty-two from Burnaby. These patients spent five thousand eight hundred and sixty-two days in the hospital at a daily cost to the hospital of $1.94 for each patient. The net loss sustained by the hospital was $6,616.98. The suggestions made have been forwarded to the respective councils for their consideration.

THE first annual meeting of the Nicola Valley General Hospital at Merritt was held October 31st. The hospital was opened last February, and the first patient admitted on the seventh of that month. Since then one hundred and thirty-four patients have received treatment. The hospital has accommodation for eighteen beds; at present this is more than sufficient, the average number of patients in the hospital at one time having been nine. However, provision has been made for extension should it be found necessary.

More hospital accommodation is urgently needed at Victoria. Since the Royal Jubilee Hospital was built, with a capacity of fifty beds, the city has grown rapidly and, consequently, the demands for hospital treatment have increased. For months the average number of patients treated has been over one hundred and applicants are being refused admission every day. It is felt, therefore, that some provision must be made at once for more extensive accommodation. One hundred and ten thousand dollars have already been secured for this purpose, but, if the work of the hospital is to be continued satisfactorily, new buildings must be erected, and to do this the sum of five hundred thousand dollars will be required. At a recent meeting of the city council, it was decided that a by-law should be submitted to provide two hundred thousand dollars for the new hospital. It is understood that, if Victoria will do its share, the provincial government will give some financial assistance.

A new building, to be used as a maternity hospital, is to be added to the Duncan Hospital. The plans were submitted to the board of directors early in October and it is hoped that the building will be completed before the spring.

During the quarter ending August 31st, thirty-three cases of scarlet fever and fifteen cases of mumps were reported in Nelson. We understand from the daily press that Dr. E. C. Arthur, the medical health officer, has recommended that the present isolation hospital be pulled down and the material used next spring to erect a new building. He states that it is impossible to disinfect the old building satisfactorily.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Dominion Medical Monthly, November, 1912:

Presidential Address, Canadian Medical Association . . . . H. G. MacKid.
A Model Medical Staff for a Modern General Hospital . . . . G. W. Howland.

The Public Health Journal, October, 1912:

A Survey of Public Health	C. A. Hodgetts.
The Open-air School Movement, 1904-1912	A. J. Greene.
The Ontario Public Health Act	J. W. S. McCullough
The Removal and Disposal of Garbage in its Relation to Public Health	R. R. Knight.
Tuberculosis and the Public	G. D. Porter.
Alcohol and Tuberculosis	J. Johannesson.

Bulletin from the Royal Victoria Hospital, Montreal, No. 2:

Some Clinical and Pathological Aspects of Glaucoma: A Retrospect of two hundred cases	F. Tooke.
Studies in Hæmatology:	
1. On Aplastic Anæmia	R. H. M. Hardisty
2. On Subleukæmic Sarcoleukæmia	O. C. Gruner.
3. On Acute Macrolymphocytar Myeloid Leukæmia, with report of a case	O. C. Gruner.
An Analysis of Eighty-two cases of Fatal Acute Pericarditis, with an Appendix on ten cases of Tuberculous Pericarditis	A. R. Landry.
Tuberculosis of the Pericardium	E. J. Mullally.
Endocarditis, with special reference to the Ulcerative Form and to Streptococcus Infection and Immunity	J. C. Meakins.
Paroxysmal Tachycardia	C. F. Moffatt.
Dentigerous Cyst	E. H. White.
Carcinoids of the Ileum	O. C. Gruner and J. H. Fraser.
Chorio-Epithelioma of the Testicle	C. B. Keenan.
Studies in Tissue Diagnosis:	
1. Carcinoma of the Prostate	W. Hutchinson.
Lympho-sarcoma of the Stomach	O. C. Gruner
Glandular Enlargements at the root of the Neck	O. C. Gruner.

Medical Societies

ST. JOHN MEDICAL SOCIETY

A MEETING of the St. John Medical Society was held on Wednesday, October 9th. The chair was taken by Dr. D. C. Malcolm, the president. Among the members present were: Drs. Malcolm, Thos. Walker, James Christie, McDonald, Dunlap, Pratt, Kelly, Duval, T. D. Walker, Allingham, McIntosh, Rowley, Macaulay, Loggie, Crawford, Bentley, and Corbett. An interesting paper on "Hospitals and Hospital Management" was read by the president, and was followed by a discussion.

VALLEY MEDICAL ASSOCIATION

A MEETING of the Valley Medical Association was held at Kentville, N.S., September 18th, on which occasion the following resolutions were moved and seconded: "Whereas the Victoria General Hospital is generally overcrowded, with increasing demand for accommodation, and whereas this section of this province represented by this association has no local hospital, and no immediate prospect of any, it is therefore resolved that this association desires to express its sense of the need of an increase in the accommodation of the hospital, and its belief that an expenditure for that purpose would be justified to the extent of the full cost by the incalculable benefit accruing to suffering humanity; and that in the opinion of this association special accommodation for those patients suffering from tuberculosis would be a most desirable addition to the institution."

TORONTO ACADEMY OF MEDICINE

A MEETING of the Eye-Ear-Nose-Throat Section of the Toronto Academy of Medicine was held October 7th, 1912, Dr. Geoffrey Boyd in the chair.

Cases Shown: 1. Dr. Colin Campbell. Ruptured globe. The patient was driving in his automobile when he was struck in the eye by some flying body, and a subjunctival rupture of the sclera was found above the cornea. There was a great deal of hæmorrhage; an attempt was made for a few days to save the eye, but subsequently it was removed. No light has been gained as to the cause of the blow, but it was thought it was a boy who had thrown some missile.

2. Dr. Price-Brown. Small dental plate, with one tooth attached, swallowed, setting up throat soreness. *X*-ray photograph showed the body near the pyloric end of the stomach, and it was removed by operation within forty-eight hours after being swallowed. Patient made an immediate recovery. Dr. Wishart spoke of a similar case where a bent pin lodged in nearly the same place. Dr. Boyd detailed his treatment in such cases.

3. Dr. Geoffrey Boyd. Chicken bone removed from the œsophagus by the direct method. After a good deal of difficulty the flat bone was seen with the œsophagoscope, seized with Bruning's forceps, and removed. Dr. Boyd spoke of the especial difficulty in seeing these bodies which are lodged just below the cricoid cartilage, and said that the instrument often had to be passed away beyond it; the foreign body might then be seen as the forceps was brought slowly back.

4. Dr. Trebilcock. Punctured wound in the ciliary region. This little girl had the ciliary region completely cut through in March last by the sharp point of a pair of rusty scissors, thrown at her by her sister. The wound was a quarter of an inch long, beginning at the root of the iris just below the cornea, and passing backward. The red reflex was easily seen through it, and vitreous was extruding. This was excised and two stitches put in the sclera. There was very little re-action and the vision is perfect.

5. Dr. Trebilcock. Man aged thirty-five, injured in the ciliary region by a flying piece of railway fog-signal. The injury was in the same region as the last case. The root of the iris was cut as the wound went into the cornea. The vitreous was seen in the wound but did not protrude. Two stitches were put in the sclera, and though there was some re-action lasting for two weeks, the man left the hospital early in July and is still well. The vision was only fair at the time of leaving and has not been tested since. Dr. Reeve spoke of the importance of removing all tissues in the wound; then, if there were no sepsis, he did not think there was much additional danger in wounds in this region. Dr. Camp-

bell said that these cases sometimes turn up after a long time with secondary trouble. He had lately seen one where trouble had come after the eye had been quiet for three years. Dr. Maclennan suggested the use of a conjunctival flap in many cases of this nature, saying that he considered it reduced the danger of subsequent infection.

6. Dr. Trebilcock. Uni-lateral parenchymatous keratitis. The cornea is mottled with haze, and there are some spots suggesting the mutton-fat deposits on the posterior surface. There is a good deal of injection and epiphora, but no pain. Began about three weeks ago, co-incident with the extraction of an upper molar, which had an abscess at its root. History of snuffles when a babe for about three months, and a diffuse rash for the first two months. Since a year and a half old has been in perfect health. Father and mother are perfectly healthy; father never consulted a physician in his life. To be reported upon at a future meeting.

7. Dr. Wishart. Radical mastoid. Chas. C., aged nine years. Discharge from left ear since a baby. Radical operation December, 1911. There being no mastoid symptoms, attacked outer wall of attic, and then the antrum, but ultimately proceeded as far as the lateral sinus, where a pocket of débris was situated. Used no suture in the flap. Packed with gauze. Removed tonsils and adenoid. External wound was healed on December 17th. Used no packing after removal of first dressing. On February 17th, wall of cavity was quite smooth, with boracic syringing only. Hearing is better in the left than in the right ear.

This case is shown for the following reasons: The small amount of scar deformity; hearing is markedly better than before operation, and better than in the other ear; there was no packing of the wound after operation. In the latter point Dr. Wishart follows the Edinburgh teaching, where he was told they have treated such cases without packing for three years. Dr. Royce said that it was hard to avoid granulations; he found that anæmic children did not have granulations like full-blooded ones. He was glad to see so beautiful a result in this case, because packing was such a nuisance. Dr. Maclennan asked what cases were not packed in Edinburgh. Dr. Boyd had done two cases in the Children's Hospital without packing; in both granulations formed and in one he had to re-open and scrape them away. He congratulated the operator in the present case. Dr. Davies said he had seen over forty cases this summer abroad, and in not one was the result so good from a cosmetic standpoint as in this case. Dr. Wishart said that Dr. Fraser, of Edinburgh, told him that they did not worry about granulations in these cases. They touched the very prominent ones with chromic acid, but that in time a smooth surface was practically always gained. He would not say that the period of healing was shortened, but the work of the surgeon was much lessened.

8. Dr. Wishart. Tumour in region of left tonsil. Began as an ulcerated surface on the cheek and uvula, with an abscess at the root of the last molar on the same side. The tooth was extracted and the cheek ulcer healed, but the uvula did not. He had had seven weeks of iodide treatment in unknown doses, during which the swelling invaded the tonsil, and increased. *X*-ray examination negative, and bacteriological examination showed a Gram-negative bacillus; Wasserman not yet done. Then paralysis of the left sixth nerve came on. The tumour is increasing. Patient denies any specific history. Dr. Price-Brown asked for temperature chart. He suggested the removal of a portion deeply for pathological examination. He detailed such a case seen ten years ago. Dr. Campbell asked if there were any involvement of the posterior ethmoidal cells, and if the man had had enough iodide to be satisfactory. Suggested that on account of the predeliction of syphilis for the third nerve, the paralysis of the sixth might point to malignancy. Dr. Boyd had examined the nose and found no sign of involvement of either the ethmoidal cells or the antrum. Dr. Wishart promised to bring the case up later in the session.

9. Dr. Gilbert Royce. Hernia of brain. Case seen first May 11th, 1911. Brought in semi-conscious state to the hospital; intense headache, then vertigo and cerebral vomiting; two epileptiform seizures. All indications of mastoid trouble. Operated, and pus escaped as if under pressure; lateral sinus not involved. Good recovery. Second time in hospital under Dr. Boyd. Small mass in the mastoid region, tender for ten days, with redness. Operated, and tissue welled into the wound; this was considered broken down brain tissue and removed. Five days after operation there were epileptiform convulsions. Erysipelas subsequently developed and was recovered from. Hernia remained as before. Some hysterical element in the convulsions was suspected.

Dr. Boyd described the appearance of patient when he saw her at operation. His first thought was of suppuration in the old wound, but on cutting down he found degenerate cerebral tissue; bleeding was so bad that nothing could be done at the time. He does not think the hernia has anything to do with the convulsions. Dr. Wishart said that the case was shown here on March 4th, and was pulsating at that time. He thinks the convulsions were not due to the tumour. Dr. Lyon would leave the hernia alone. Dr. Royce had seen only one other hernia of brain following mastoid operation, and that was held by the deep flap of the scalp.

REGINA MEDICAL SOCIETY

A MEETING of the Regina Medical Society was held October 8th. The officers elected for the year 1912-1913 are: president, Dr. Gorrell; vice-president, Dr. Johnstone; secretary, Dr. Dakin. The members of the advisory committee are Dr. Low, Dr. Stevens, and Dr. Cullum.

OTTAWA MEDICAL SOCIETY

AT a meeting of the Ottawa Medical Society, which took place in St. Luke's Hospital October 25th, the following officers were elected for the year 1912-1913: president, Dr. Charles W. Gorrell; first vice-president, Dr. Campbell Laidlaw; second vice-president, Dr. Neil McLeod; secretary, Dr. A. MacLaren; treasurer, Dr. Harold Alford; executive council: Dr. A. T. Shillington, Dr. J. F. Kidd, Dr. R. L. Gardner, Dr. J. McKelvey Bell, and Dr. Omar Wilson.

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE second regular meeting of the society was held Friday evening, October 18th, 1912, the president, Dr. D. J. Evans, in the chair.

LIVING CASES: The operative treatment of Pott's disease of the spine, by Dr. A. Mackenzie Forbes.

All are agreed that the treatment of Pott's disease of the spine should be principally by rest, fresh air, and diet. Rest should include both general rest and local rest. In the past we have endeavoured to get local rest by recumbency, plaster jackets, and spinal splints or braces. There are a certain number of patients who cannot be suitably treated by either spinal braces or by the use of plaster of Paris jackets. These, I should say, are those who either have rebelled against these restraining measures, or who suffer from lesions which are difficult to control because of the position of them. I speak, for instance, of cervico-dorsal lesions and tuberculous lesions of the lower lumbar vertebræ. For these, operative procedures may be considered. There are three forms of operation suggested for the immobolization of spinal vertebræ affected with tuberculous disease: first, the steel splint suggested by Professor Lange, of Munich; second, the bone splint suggested by Dr. Albee, of New York; and third, the bridge of bone, suggested by Dr. Hibbs, of New York. In my opinion each of these operations has a distinct place in the surgery of the spine. For instance, where the spinous processes are long and the deformity is great the reduction of the spinous processes and the conversion of them into a bony bridge in order to unite the diseased vertebræ, as suggested by Dr. Hibbs, is undoubtedly of great value. On the other hand, if we are dealing with a child of tender years the operation suggested by Dr. Albee may often be of benefit. Lastly, I would say that if we are dealing with an adult who has been accustomed to live an active life, and who will not bear the restraint necessary for the organization of a bony splint, the steel splints suggested by Lange are of undoubted value.

I beg to present two patients illustrating two of these procedures:

1. Patient, an adult Indian, whose occupation is that of building bridges, and who has already been treated by plaster jackets which he refuses to wear, demonstrates treatment by the steel splints of Lange. In him the spinous processes of the affected vertebræ were exposed. On each side of these, steel splints have been placed. The two steel splints and the spinous processes have been lashed together by means of wire carried through holes drilled in the spinous processes of the diseased vertebræ. The x-rays, which I now present, demonstrate, first of all, the tuberculous lesion; and secondly, the spinal splints buried in the suggested position. It is hardly three weeks since the operation was performed on this man, and as you see he is able to get around with a considerable degree of comfort and it is hoped that the steel splints will give sufficient local rest to the diseased parts to facilitate the cure of the disease. This is the second patient whom I have presented before this society in whom the operation has been performed.

2. Patient, a little child, who a few weeks ago was operated on after the method of Albee, of New York. The lesion in this case is in the cervico-dorsal region. Here the spinous processes were exposed and incised vertically at the junction of their outer and middle thirds. Into this trough was placed a splint of bone taken from the tibia. The periosteum and interspinal ligaments were sewn over this splint, as also were the muscles detached on each side of the spine. In this way the bone graft has been absolutely buried in a gutter of bone, ligament, and periosteum.

Discussion. Dr. J. M. Elder: With regard to the two methods, one would think that bone grafting would be better than putting in foreign bodies. I do not know, though, that this has proved the case. The question of bone grafting is one that I discussed here last session, and lately, in the *Annals of Surgery*, a paper has been published by Williams, of New York, in which the different views of different authorities are set out. Macewan, of Glasgow, and others, object to transplantation of the periosteum, and Murphy, of Chicago, says that any bone graft you put in is bound to be absorbed and may or may not be replaced by other bone, but it will not stay itself. Macewan says you should never transplant periosteum, that you should take subperiosteal bone. This is disputed by many. I would ask Dr. Forbes why he put in some periosteum on two sides of the bone. I presume Dr. Forbes holds the opinion that periosteum holds osteogenic properties and that his splint will grow stronger as time goes on. Undoubtedly I have seen his case of Lange's splint improve; fixation is certainly obtained, and this appears to be the essence of the whole cure in these cases of spinal curvature. I wish to congratulate Dr. Forbes very much on the results shown in these two interesting cases which he has presented so shortly after operative treatment.

Dr. F. R. England: I would like to ask Dr. Forbes if the osteitis in this case was in the bodies of the vertebræ or in the laminæ and articular processes. Generally in Pott's disease it is the bodies which are most affected; absorption goes on, and several discs fall together causing the spinous processes and laminæ to project posteriorly (the usual angular deformity). Splitting the spinous processes, as Dr. Forbes has done, must necessarily, for a time at least, weaken the column and lessen fixation, the very object which is so much desired in these cases.

Dr. Forbes: As Dr. Elder says, there is no question at all that the Lange operation is a very good one and probably the Albee is equally so; it seems to me that it is just a question of judgement as to which shall be used in each particular case. In answer to the question as to whether these cases will do well, this is the first time that I have had the pleasure of showing a man like this Indian so soon after the operation. The question, therefore, is a very natural one, as to what will happen in time to come, but you will remember that it is only a year since I brought a man called McKeown before the society, who had been treated by similar splints during the two preceding years, and who had been occupying himself as a furnaceman with these splints buried in his back.

As regards the contention that the periosteum is not necessary, many people disagree with Professor Macewan, and I know that since his statements were made several have been investigating the subject and feel that the professor is wrong, and that the periosteum is the most important thing in the regeneration of bone. Knowing this I thought it safer, in the case of this little child, to preserve the periosteum when I buried the bone splint.

In answer to Dr. England's question, in the vast majority of Pott's disease of the spine, the primary lesion, and usually the later lesions, are in the body of the vertebræ. It seems to me that if you are able to immobilize a part of the vertebræ that you probably immobilize the whole. I have seen this done experimentally on a great many occasions. As regards the question of the body wedge placed between the two halves of the spinous processes, I may say that three or four years ago Brackett, of Boston, pointed out that nature's means of curing Pott's disease of the spine was by causing bony bridges to be formed about the posterior part of the vertebæ and not on the bodies themselves.

Pathological Specimens: Exhibited by Dr. O. C. Gruner.

1. Multiple abscesses of liver, from a case of gangrenous appendicitis in a male aged twenty-four. The illness came on suddenly with acute pain in the upper abdomen two days before admission. An operation for cholecystitis was performed. The specimen shows numerous small abscesses of characteristic arborescent shape. There is septic clot in all branches of the portal vein.

2. Perforating tuberculous ulcer of cæcum from a patient aged thirty-five, admitted for appendicitis. There were symptoms of intestinal obstruction, but no clinical evidence of tubercle. The specimen shows a perforation of the wall of the cæcum near the position of the appendix, and a second perforation about an inch away from the first. The wall is much inflamed and the outer side is covered with plastic exudate.

3. Aneurysmal dilatation of one cusp of the aortic valve and gumma of heart wall from a patient aged thirty-six, suffering from cardiac failure. The specimen shows marked deformity of the valves, one cusp being markedly enlarged, while the others are shallow. Between the two latter is a whitish nodule of cheesy consistence. The aorta is much puckered.

4. Psammoma of cord. A microscopic section from a tumour successfully removed by operation. There were paralytic symptoms before operation. Duration before admission was four months.

Case Reports: (1) Trichiniasis in Montreal, by Dr. H. B. Cushing and Dr. L. G. Houle. The case here reported occurred in the Royal Victoria Hospital during the past summer. Patient, A. D., a French-Canadian girl, aged nineteen, was admitted to the wards, July 5th, 1912, complaining of fever, pain in abdomen, arms and legs; she had lived in St. Henry ward for years, and had not been out of the city for several months. The illness began seventeen days previously; her feet began to pain her, she could not walk, and later the hands became involved and she could not use them. The swelling lasted three or four days and then disappeared altogether, but the pain and tenderness persisted till admission to the hospital About the time her arms and legs were swollen her eyelids were also affected. A few days previous to her admission the pain in the abdomen was described as more or less continuous soreness and diffuse. No history of diarrhœa or vomiting. Patient was a well-developed girl, face full and round, no noticeable œdema of lids, no œdema of extremities; muscles firm and well developed. A moderate degree of continuous fever. Patient holds her arms semi-flexed at the elbow and cannot extend them on account of pain; cannot stand on account of pain in legs, and muscles all over body seem to be tender at various points not well defined by patient. No definite arthritis can be made out in any of the joints. Some abdominal tenderness, more or less diffuse, especially in the right side. Other systems of the body all normal.

As to the question of diagnosis, the case was regarded at first as either one of acute rheumatic fever or gonorrhœal arthritis, on account of pain in arms and legs, but the definite absence of distinct arthritis excluded these. The question of a peripheral neuritis was also considered, but there were normal reflexes and absence of paralysis and anæsthesia. Trichiniasis was next suggested on account of the characteristic syndrome of fever, pain, muscular tenderness, and a history of œdema of the eyelids, together with the hands and feet. The blood count showed, red blood cells, 4,150,000; whites, 7,000; hæmaglobin, 80 per cent., and a differential count showed 16½ per cent. eosinophiles. On the strength of the marked eosinophilia Dr. Bruere was requested to search for trichinæ in a piece of muscle removed under local anæsthesia. On microscopical examination many trichinæ embryos were found from between the muscle fibres. On enquiry the patient said that the family had been eating a great deal of pork lately, and that she had been in the habit of cutting off a small piece of the raw meat and eating it in that way. A temperature of one hundred and sixty degrees kills the worms, so that probably the other members of the family had eaten the pork after it was cooked as none of them had been ill. While in hospital the patient improved without special treatment, and left the hospital on the twenty-ninth day after onset of illness apparently quite well.

There is no doubt that many trichinous hogs are used for food in this city every year. In a recent bulletin of the Department of Agriculture it is shown that one to two per cent. of the hogs slaughtered in the United States are infected with trichinæ. In 1883 Osler made an examination of one thousand hogs at the Montreal abattoirs and found four cases of trichinosis amongst them. Williams, of Buffalo, in five hundred and five consecutive human autopsies found twenty-seven cases with encysted trichinæ. This seems a large number, yet it is possible that many of us have overlooked the condition, it being taken for typhoid, influenza, rheumatism, etc. Dr. Girdwood drew my attention to the fact that a case report published in 1869 showed a series of cases occurring in the city at that time.

DISCUSSION. Dr. F. M. Fry: I would like to know what becomes of the encysted embryos in the muscles and what is the mortality, if any, and prognosis.

Dr. J. G. Adami: Ever since Professor Williams called attention to the frequency of evidence of old trichinosis in his autopsy material at Buffalo, I have had the possibility of this disease being present in our Montreal material constantly before me, and thus for some years past I have as a routine matter observed the neck muscles in the autopsies conducted by me at the Royal Victoria Hospital. This, it is true, is not a thorough examination, but had trichinosis been common, at least a certain proportion of cases would have showed the fine dots of calficied material representing the old encysted worms. These neck muscles are, perhaps, the best place in which to see these. I have never encountered them, and thus have concluded that trichinosis is rare in Montreal, and have explained the figures afforded by Williams as being due to the fact that in Buffalo there is a large immigrant population of Germans accustomed to eating uncooked food. Thus I am interested to have at last a definite case here in Montreal.

Dr. F. G. Finley: One summer, doing autopsies at the General Hospital, I found two cases of trichinosis, both old; in one the worms were encysted in the muscles of the larynx, and the other in the larynx, muscles of the neck, thorax and diaphragm.

Dr. Maude E. Abbott: While in Berlin I saw two post mortems on the same day of extreme cases of trichinosis, practically all the muscles of the body being involved. An interesting fact is that while at the present time in Germany many cases of encysted trichinæ are found, the actual history of the acute attack of diarrhœa, vomiting, the febrile stage, etc., dates back as far as sixteen years previously, this being the time that legislation took up the matter of the inspection of hogs and directed the public in the matter of eating only pork which had been well cooked. Cases of recent infection were said to be almost nil.

Dr. S. Ortenberg: I think those who have read the recent issue of THE JOURNAL OF THE CANADIAN MEDICAL ASSOCIATION will have noticed that a public health department has been inaugurated in the Federal Parliament. I therefore believe it would be a good plan to suggest to this new body at Ottawa that they should take steps towards appointing medical inspectors at the abattoirs to supervise all meat. In this way a great deal would be done towards the prevention of disease in general.

Dr. D. J. Evans: What are the regulations here with regard to the inspection of pork?

Dr. J. G. Adami: The inspection here in Canada is purely by the naked eye and is mainly directed towards such conditions as tuberculosis and other gross forms of disease. In Germany, as already stated, routine microscopic examination is made of certain muscles from each hog. This, indeed, is the only way in which trichinosis can certainly be detected and involves much work, for which I believe a corps of (generally) female inspectors is employed.

Dr. H. B. Cushing: As to the mortality from this disease, I recently saw a paper giving a collection of fifteen thousand cases, with a death rate of five per cent. Death usually occurs from exhaustion in the third or fourth week. As to what becomes of the encysted trichinæ, they simply stay there for the rest of the patient's life. It does not seem to be established how they get into the pork, but it has been suggested that the eating of rats by the hogs is a cause. As to the question of these cases occurring in Montreal, it seems to me, after having studied this case in the ward, that I might easily have mistaken similar cases before. Recently a large number of cases has been recorded from New York hospitals as the result of the routine eosinophile count, and the condition is looked for in all such cases, especially those of conjunctivitis with œdema. As to inspection of hogs, the only place it is done is in Germany; the only adequate means is by careful miscroscopic examination of the muscles by a specially trained staff. In the Bulletin of the United States Government, it is specifically stated that they do not recommend this inspection as it would be too large an undertaking, and that the easier method of prophylaxis is to educate the public to thoroughly cook their meat.

2. Complete twist of the mesentery. Operation; recovery. By Dr. E. W. Archibald.

The patient was a boy of sixteen years, who at the age of nine was operated on by the late Dr. Bell for perforative appendicitis. In June, 1911, he was admitted with the diagnosis of intestinal obstruction. His condition was so serious that at operation, which was immediately undertaken, it was considered wise to short circuit the distended ileum into the collapsed ileum below the obstruction, which was clearly due to a general matting of coils of bowel in the region of the old appendix wound. He made a quick recovery and was well till December 15th, 1911, when, about 9 a.m., he was seized with very severe generalized abdominal pain. He was admitted to hospital a little after midday in a state of serious collapse. He was very pale, almost pulseless, and clearly suffering extreme pain in spite of morphia. At a quarter to two I operated, that is, about five hours after the onset of symptoms. It was necessary to eviscerate the small bowel completely. It was purplish and almost black in its whole length, with the exception of about a foot from the duodenal juncture and about a foot and a half from the cæcum. It was very much distended. It was trocared in two places, giving exit to about a quart of very bloody, thin, fæcal contents. The root of the mesentery was found drawn out like a stalk, twisted on itself through one complete turn, that is, three hundred and sixty degrees. The volvulus was reduced by taking up the entire package of bowel between the forearms and walking with it round the foot of the table. The twist had occurred in the direction of the hands of a clock. Circulation returned very quickly, although the mesentery was extensively ecchymosed and very œdematous. He made an uninterrupted recovery and has remained well up to date. As explaining possibly the cause of the volvulus, there was found, in addition, a loose internal hernia of several feet of small bowel, through what appeared to be a gap in the root of the mesentery. This gap was situated at the point of the previous entero-enterostomy. The case will receive fuller consideration in a later report.

DISCUSSION. Dr. Fraser B. Gurd: I have had the opportunity of observing one case of complete twist of the mesentery. The outstanding clinical symptoms in this case were the extremely intense pain and the early and pronounced distention. As compared with obstruction from other causes, there is, moreover, a comparative freedom from vomiting. Even though an early clinical diagnosis of obstruction be made and a laparatomy performed, it is possible to lose a great deal of precious time if the operator attempts to localize the point of obstruction by searching piecemeal the whole intestinal tract. No other intestinal condition produces an exactly similar state of generalized distention and deep purple discolouration of the small gut, unless it be certain stages of superior mesenteric thrombosis.

Dr. J. M. Elder: I would like to ask Dr. Archibald if he has any idea of the loop he left out previously, e.g., the weight of it, or was it long enough or heavy enough to produce a dragging to predispose to the condition of twisting or volvulus? I do not understand that he followed this loop. It is a well-known fact that in emergency surgery of the abdomen, especially in obstruction cases, you do not know what you are going to find. A volvulus of the mesentery forms always in the direction in which the fæces pass along the large intestine. Any obstructive condition, e.g., a partial constriction of the bowel, anywhere near a fixed point, is particularly liable to produce volvulus, just as tumours of the bowel are particularly liable to produce intussusception. Adhesions and strictures are liable to produce volvulus; the condition of volvulus differs to some extent from that of intestinal obstruction of other kinds. In the latter you may not have involvement of the blood supply of the bowel, whereas in volvulus this is the essential factor, and if prompt action is not taken gangrene sets in.

Dr. F. R. England: At the last Montreal meeting of the Canadian Medical Association I reported a very similar case to Dr. Archibald's. The patient had been ill not more than thirty hours before operation. At the operation a volvulus was found of the small intestine, several coils had been twisted around the mesentery causing obstruction of the bowel and interfering with the blood supply. The involved bowel was black and much distended;

it was friable and ruptured on handling. The patient's condition was very grave, but, as there was no alternative, a rapid resection was done and end-to-end anastomosis made and seven feet five inches of bowel resected. The patient was very ill for thirty-six hours after operation, but made a good and complete recovery. I think it is now pretty well recognized that a long mesentery plays an important part in these cases; if not the determining cause, certainly it is a strong predisposing cause of volvulus in either the large or small intestine. Dr. Fraser Gurd's remarks on the importance of early diagnosis are well taken. I have not seen in any condition such violent symptoms coming on so suddenly and with so much abdominal distention.

HALIFAX MEDICAL SOCIETY

The Halifax branch of the British Medical Association has ceased to be. This is the last of the many branches of the association that were formed in Canada fifteen years ago. It is felt that the time has come when some change should be made and an almost universal desire has been expressed for affiliation with the Canadian Medical Association. A new society has, therefore, been formed—the Halifax Medical Society. Most of the active practitioners of Halifax and Dartmouth have joined the society and it has already a membership of fifty-eight.

The second meething of the new society was held November 4th. The meeting was most successful and was well attended. An interesting address was delivered by the president, Dr. E. A. Kirkpatrick, in which he referred to the urgent need of more extensive hospital accommodation in Halifax. The hospital is always crowded and patients frequently have to wait one, two, or even three, weeks before they can be admitted. The fact that plans have been proposed by the Canadian government which, if carried out, will entail an expenditure of $30,000,000 on new terminals, increases tenfold the need for more hospital accommodation. It is proposed to approach the government of Nova Scotia with the request for an extension of the Victoria General Hospital, which will provide accommodation for one hundred additional patients in the public wards and twenty-five more private patients. At present there are one hundred and seventy beds in the hospital, fifteen of which are for private patients. Many other points of interest to the profession were touched upon by Dr. Kirkpatrick. His address was followed by an excellent paper on "Food poisons," by Dr. Simpson, of Dartmouth.

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[*Members are requested to inform the editor of any errors in this list.*]

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